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TRANSACTIONS

OF THE

WISCONSIN
STATE HORTICULTURAL SOCIETY

INCLUDING

ADDRESSES AND PAPERS PRESENTED,

AND

PROCEEDINGS AT THE SUMMER AND WINTER MEETINGS

OF THE YEAR 1879-80.

F. W. CASE, SECRETARY.

VOL. X.

MADISON, WIS.:
DAVID ATWOOD, STATE PRINTER.
1880.

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REPORT TO THE GOVERNOR.

To His Excellency, WILLIAM E. SMITH,

Governor of the State of Wisconsin:

I have the honor herewith to present to you the tenth volume of the Transactions of the Wisconsin State Horticultural Society. While this is a duty imposed by legal enactment, the obligation is complied with not as a mere matter of form, but with great pleasure, on account of the kind interest you have ever manifested in our work, and the personal and official influence with which you have sought to aid us. The society and the interests which it represents are under great obligation to yourself and to the legislature for the encouragement thus given, and for the confidence expressed in granting us material aid in carrying on our work. The contents of this volume presents, we heartily trust, but a small portion of the work performed by the society the past year, and but faintly indicates the beneficial influence it has exerted, yet we hope that enough will here be found to prove that we have been faithful to our mission and worthy of the confidence placed in us.

The act of reorganization, passed in 1878, brought the society into closer relations to the state government and made it more emphatically a state organization. This opened to it a more extended field of labor and imposed upon it greater obligations, making it advisable to change the character and method of its operations. It was thought that the trust thus committed to us could be better promoted by working with and through the various local societies in different parts of the state, in holding meetings for discussions, and for reading practical papers on horticulture, in connection, where the season and circumstances would permit, with exhibitions of the horticultural products of the locality. A number of June meetings of this character have been held, and with very gratifying results. Those best acquainted with the effect produced, say that "the influence thus exerted will be favorable, in the highest degree, to the interests of horticulture, and will be felt for a long time to come." It is proposed in the future, to extend the work done in this direction, and to hold meetings of a similar character during the fall and winter months wherever local societies or the citizens take sufficient interest in the work to coöperate with us. We are firmly convinced that in no other way can we reach a larger number, exert a greater influence for good, or better use the means the state has placed at our disposal.

Owing to the general interest felt in fruit culture, and the peculiar difficulties existing in our soil and climate to its successful prosecution, the attention of the society in the past has been largely directed to this branch of horticulture, but there are many other subjects embraced in this field that

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should be considered, and to which it is our purpose to give special attention. Among the many questions that are of vital importance to the health, comfort and happiness of the citizens, and that are intimately connected with the prosperity of the state, there are two which seem to demand immediate action, and to which our attention will be largely directed in the near future. One is the Destruction Occasioned by our Insect Enemies; the other, the Production and Preservation of our Timber. Those who are most familiar with the first subject, estimate the damage done by insects at fully one-tenth of the value of the entire agricultural product of the state, and that the evil is constantly increasing. This loss is largely chargeable to want of information on the part of the public in regard to the character and habits of these pests, and the means best calculated to destroy them. With reference to our timber, it is a well known fact that our forest wealth is rapidly melting away under the relentless axe of the lumbermen, and that still more destructive fires are sweeping off the second growth of timber all through the sparsely settled portions of the state. In addition to the great waste thus occasioned, there is no doubt but that this wholesale destruction of the trees is exerting an injurious effect upon our climate, causing great extremes, and general atmospheric conditions unfavorable to agricultural production. Though there may be difference of opinion as to the effect of the destruction of our forests upon the amount of rainfall, there is none in regard to the influence on its distribution and retention, or to the electrical and atmospheric disturbances occasioned thereby. We deem these subjects to be of great importance, and that it is our duty to do all we can to direct the attention of the public to them, so that measures may be taken to avert impending and existing evils.

It is a matter of great encouragement in our work that the interest felt in horticulture seems to be steadily increasing, and that instead of being regarded as a pastime, a hobby to be indulged in only where time and means permit, it is beginning to be considered essential to the health and comfort of the family, and profitable, not only in the matter of dollars and cents returned, but in value added to the farm, and the increased beauty and attractiveness it gives to home and its surroundings. We trust that this is but the commencement of still greater progress, and that the future efforts of the society to develop the horticultural resources of the state may be attended with far greater results than those of the past.

Your obedient servant,

F. W. CASE, *Secretary.*

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LIST OF OFFICERS, 1880.

PRESIDENT.

J. M. SMITH, - - - - - - - - - GREEN BAY.

VICE PRESIDENT.

J. C. PLUMB, - - - - - - - - - MILTON.

RECORDING SECRETARY.

F. W. CASE, - - - - - - - - - MADISON.

CORRESPONDING SECRETARY.

A. L. HATCH, - - - - - - - - - ITHACA.

TREASURER.

M. ANDERSON, - - - - - - - . CROSS PLAINS.

MEMBERS OF EXECUTIVE COMMITTEE.

Ex Officio.

J. M. SMITH, President, Green Bay.
F. W. CASE, Secretary, Madison.
M. ANDERSON, Treasurer, Cross Plains.

Dist.	*Dist.*
1st. F. S. LAWRENCE, Janesville.	5th. GEORGE C. HILL, Fond du Lac.
2d. J. W. WOOD, Baraboo.	6th. D. HUNTLEY, Appleton.
3d. S. J. FREEBORN, Ithaca.	7th. A. A. ARNOLD, Galesville.
4th. J. S. STICKNEY, Wauwatosa.	8th. AUGUSTUS COLE, Oconto.

COMMITTEE ON NOMENCLATURE.

J. C. PLUMB, Milton. D. T. PILGRIM, West Granville.
G. J. KELLOGG, Janesville.

COMMITTEE OF OBSERVATION.

Dist.	*Dist.*
1st. D. T. PILGRIM, West Granville.	7th. D. HUNTLEY, Appleton.
2d. J. C. PLUMB, Milton.	8th. A. B. BALCH, Fremont.
3d. GEO. HILL, Fond du Lac.	9th. A. J. PHILIPS, West Salem.
4th. A. L. HATCH, Ithaca.	10th. G. W. PERRY, Superior.
5th. E. W. DANIELS, Auroraville.	11th. J. LANDRETH, Manitowoc.
6th. C. W. POTTER, Mauston.	12th. J. M. SMITH, Green Bay.

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MEMBERS, 1880.

Adams, B. F.	Madison	Wisconsin.
Alcott, Wm.	Brodhead	Wisconsin.
Allen, Prof. W. F.	Madison	Wisconsin.
Anderson, Hon. M.	Pine Bluff	Wisconsin.
Barter, S.	Markesan	Wisconsin.
Baumback, William.	Wauwatosa	Wisconsin.
Case, F. W.	Madison	Wisconsin.
Daniels, E. W.	Auroraville	Wisconsin.
Freeborn, S. J.	Ithaca	Wisconsin.
Gill, Wm.	Dayton	Wisconsin.
Goss, B. F.	Pewaukee	Wisconsin.
Graves, S. W.	Brooklyn	Wisconsin.
Greenman, C. H.	Wauwatosa	Wisconsin.
Hacker, T. L.	Madison	Wisconsin.
Haight, Nicholas.	Syene	Wisconsin.
Hall, C. H.	Neilsburg	Kansas.
Hambright, C. M.	Beaver Dam	Wisconsin.
Hanchett, Mark.	Footville	Wisconsin.
Hatch, A. L.	Ithaca	Wisconsin.
Hill, Geo. C.	Rosendale	Wisconsin.
Hirschinger, Chas	Baraboo	Wisconsin.
Holt, M. A.	Madison	Wisconsin.
Hoxie, B. S.	Cookville	Wisconsin.
Howie, John.	Waunakee	Wisconsin.
Hunt, Samuel.	Evansville	Wisconsin.
Jeffrey, Geo.	Milwaukee, 630 Chestnut St.	Wisconsin.
Jewett, Z. K.	Sparta	Wisconsin.
Kellogg, Geo. J.	Janesville	Wisconsin.
Lawrence, F. S.	Janesville	Wisconsin.
Lowe, Victor.	Palmyra	Wisconsin.
McDonald, D.	Verona	Wisconsin.
Mortimer, Henry.	Manteno	Illinois.
Olds, B. B.	Clinton	Wisconsin.
Palmer, N. N.	Brodhead	Wisconsin.
Peffer, Geo. P.	Pewaukee	Wisconsin.
Philips, A. J.	West Salem	Wisconsin.

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Pilgrim, D. T.	West Granville	Wisconsin.
Plumb, J. C.	Milton	Wisconsin.
Plumb, T. D., Jr.	Madison	Wisconsin.
Potter, C. W.	Mauston	Wisconsin.
Reid, Wm.	North Prairie.	Wisconsin.
Reynolds, Werden	Green Bay	Wisconsin.
Robinson, C. E.	Portlandville	Iowa.
Smith, Alfred	Madison	Wisconsin.
Smith, J. M.	Green Bay	Wisconsin.
Spencer, R. C.	Milwaukee	Wisconsin.
Steinfort, H.	Lake Mills	Wisconsin.
Stickney, J. S.	Wauwatosa	Wisconsin.
Stone, I. N.	Fort Atkinson	Wisconsin.
Thompson, H. M.	St. Francis	Wisconsin.
Tuttle, A. G.	Baraboo	Wisconsin.
Warren, A. A.	Green Bay	Wisconsin.
West, J. R.	Evansville	Wisconsin.
Whitney, A. R.	Franklin Grove	Illinois.
Wilcox, E.	Trempealeau	Wisconsin.
Wilder, S.	Harlem	Illinois.
Williams, Daniel	Summit	Wisconsin.
Wood, J. W.	Baraboo	Wisconsin.

HONORARY MEMBERS.

LIFE.

Dr. Joseph Hobbins, ex-President; F. G. S., Corresponding Member Royal Horticultural Society, England, Madison, Wisconsin.

O. S. Willey, ex-Recording Secretary, Benton Harbor, Michigan.

ANNUAL.

E. B. Jordan	Rochester	Minnesota.
J. M. Underwood	Crystal Lake	Minnesota.
T. H. Glenn, Ed. Pr. Farmer	Chicago	Illinois.
Miss Emily Smith	Peoria	Illinois.
Dr. P. H. Hoy	Racine	Wisconsin.
Jonathan Periam, Ed. Pr. Farmer	Chicago	Illinois.
Mrs. D. Huntley	Appleton	Wisconsin.
Mrs. H. M. Lewis	Madison	Wisconsin.
Mrs. D. C. Ayres	Green Bay	Wisconsin.
Mrs. M. M. Davis	Baraboo	Wisconsin.
Mrs. Prof. A. Kerr	Madison	Wisconsin.

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FRUIT LISTS.

APPLES.

Six Varieties, Hardiness Only Test.— Duchess of Oldenburg, Wealthy, Tetofsky, Hass, Fameuse, Plumb's Cider.

List for General Cultivation.— Tetofsky, Duchess of Oldenburg, Hass, Plumb's Cider, Fameuse, Walbridge, Red Astrachan, Utter, Westfield Seek-no-Further, Tallman Sweet, St. Lawrence, Willow Twig, Pewaukee, Wealthy, Golden Russet, Price Sweet, Fall Orange, Alexander.

NOTE.—The question of adaptation of varieties is one so largely dependent upon local conditions of soil, elevation and aspect, that a general list will not answer fully the wants of every planter, and at best can only be a general guide in the selection of varieties.

For more specific directions, the following rules and lists are furnished by the committee chosen for this purpose:

1. Locations comparatively elevated and well drained, with a cool northern aspect and fine gravelly clay soil, not very rich, may extend the general list named above to an indefinite extent, with fair prospect of success in southern and eastern districts of the state. But for warm, sheltered locations and rich soils, which induce a great growth, no section of our state can safely plant other than those varieties known to be extremely hardy.

2. The best guide in the selection of varieties is for each to plant largely of such varieties as are found successful in locations similar to that each must plant upon. For all unfavorable locations, and extreme northern districts, only the most hardy, well tried apples of the Russian or Siberian type should be chosen for general planting.

3. In the extreme northern districts, only the crown of the hills should be chosen for the orchard, with a firm soil and porous subsoil, and if these materials are wanting naturally, they should be supplied artificially.

GRAPES.

General List.— Concord, Delaware, Worden, Wilder, Agawam, Janesville, Lindley.

For Trial.— Israella, Massasoit, Brighton, Champion.

RASPBERRIES.

For General Cultivation.— Miami, Philadelphia, Doolittle, Turner and Brandywine, also Fastolif and Brinkle's Orange, *if protected in winter.*

STRAWBERRIES.

For General Cultivation.— Wilson's Albany.

For Trial.— Charles Downing, Boyden's No. 30, Green Prolific, Kentucky, Prouty's Seedling, Col. Cheney, Crescent Seedling, Sharpless and Captain Jack.

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PEARS.

Most Likely to Succeed for General Cultivation.— Flemish Beauty.

For Trial.— Ananas d'Ete, Early Bergamot, Bartlett, Swan's Orange, Seckel, Winter Nellis, Clapp's Favorite.

PLUMS.

For Trial.— Lombard, Imperial Gage, Magnum Bonum, Yellow Egg, Eldridge, Duane's Purple, De Soto.

CHERRIES.

For Trial.— Early Richmond, Late Richmond or Kentish, English Morello.

EVERGREENS.

For General Cultivation.— Norway Spruce, White Pine, Arbor Vitæ, Scotch Pine, Balsam, White Spruce.

For Ornamental Planting.— Austrian Pine, Norway Pine, Hemlock, Siberian Arbor Vitæ, Red Cedar, Dwarf Pine (*Pinus Montana*).

For Timber.— European Larch, White Pine.

For Live Fence Posts.— Norway Spruce.

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ACT OF REORGANIZATION OF THE STATE HORTICULTURAL SOCIETY.

CHAPTER 151, LAWS OF 1879.

SECTION 1. The executive committee of the Wisconsin State Horticultural Society shall hereafter consist of the president, secretary and treasurer of said society, and of one member from each congressional district of the state; said members from the congressional districts to be chosen annually by the county and local horticultural societies in the respective districts.

SECTION 2. The present officers and executive committee of said society shall hold their respective offices until the Tuesday next succeeding the first Monday in February, 1880, and until their successors are appointed.

SECTION 3. It shall be the duty of the said society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by the holding of meetings for discussion; by the collection and dissemination of valuable information in regard to the cultivation of fruits, flowers and trees adapted to our soil and climate, and in every proper way to advance the fruit and tree growing interests of the state.

SECTION 4. The annual meeting of the society shall be held on the Tuesday next succeeding the first Monday in February of each year, for the election of its officers, the transaction of general business, and the consideration of questions pertaining to horticulture.

SECTION 5. All vacancies in the offices of said society may be filled by the executive committee; and should there be a failure to elect a member of the executive committee in any district, the vacancy may be filled by a two-thirds vote of the members of the society present at any regularly appointed meeting.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state, of the transactions of the society, including an itemized account of all moneys expended during the year, in addition to such matters as are now specified in the law relating to the same.

SECTION 7. The number of printed pages of said report shall not exceed three hundred and fifty, and the number of copies shall be limited to three thousand five hundred. In all other respects, the publication and distribution of said report shall be in accordance with the provisions of the law now in force concerning the same.

SECTION 8. The sum of $600 is hereby appropriated out of any money in the state treasury not otherwise appropriated, to aid the said society in carrying out the provisions of this act; said sum to be paid by the state

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treasurer upon the order of the president of said society, in such sums and at such times as shall best contribute to the prosperity of the society and the interests it represents.

SECTION 9. This act shall take effect and be in force from and after its passage and publication.

Approved March 1, 1879.

CONSTITUTION AND BY-LAWS.

As amended February, 1879.

CONSTITUTION.

ART. I. This society shall be known as the Wisconsin State Horticultural Society.

ART. II. Its object shall be the advancement of the science of horticulture.

ART. III. Its members shall consist of *annual* members, paying an annual fee of one dollar; of *life* members, paying a fee of ten dollars at one time; of *honorary life* members, who shall be distinguished for merit in horticultural or kindred sciences, or who shall confer any particular benefit upon the society; and *honorary annual* members, who may, by vote, be invited to participate in the proceedings of the society.

ART. IV. Its officers shall consist of a President, Vice President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent, and an Executive Board, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies reporting to this society, shall be deemed honorary members and *ex officio* vice-presidents of this society. All officers shall be elected by ballot, and shall hold their office for one year thereafter, and until their successors are elected; provided, the additional executive members may be elected by the county or local horticultural societies of their respective districts.

ART. V. The society shall hold annual meetings, commencing on the Monday next preceding the first Tuesday in February, for the election of officers, for discussions, and for the exhibition of fruit; also one meeting during the fall, for the exhibition of fruits and for discussions, and such other meetings for discussions and exhibition as the executive committee may direct, at such time and place as the executive board shall designate.

ART. VI. This constitution, with the accompanying by-laws, may be amended at any regular meeting, by a two-thirds vote of the members present.

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BY-LAWS.

I. The president shall preside at meetings, and, with the advice of the recording secretary, call all meetings of the society and have a general supervision of the affairs of the society; and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society, at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies, of the condition and progress of horticulture in the various districts of the state, and report the same to this society. It shall be the duty of the secretary to make an annual report to the governor of the state, of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society, and disburse the same on the written order of the president, countersigned by the secretary, and shall make an annual report of receipts and disbursements, and furnish the secretary with a copy of the same, on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the duties of his office, give good and sufficient bonds for the faithful performance of his duties, subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs, and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committee.

VI. It shall be the duty of the finance committee to settle with the treasurer, and to examine and report upon all the bills or claims against the society, which may have been presented and referred to them.

VII. The standing committees of this society shall be as follows: 1st, Committee on Finance, consisting of three members; 2d, Committee on Nomenclature, consisting of three members; 3d, Committee of Observation, as now provided. Said committees to be appointed annually by the executive committee of the society.

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LAWS RELATING TO THE PUBLICATION AND DISTRIBUTION OF THE TRANSACTIONS OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

Revised Statutes, 1878.

SECTION 339. There shall be printed annually by the state printer, on the order of the commissioners of public printing, * * * three thousand copies of the transactions of the Wisconsin State Horticultural Society, together with abstracts of reports of county and other horticultural societies, and such other matter pertaining to fruit growing and other horticultural interests of the state as shall be deemed important. The volume may include such engravings as shall be necessary to illustrate the printed matter; the cost of said engravings not to exceed the sum of one hundred and fifty dollars in any one year, and to be paid out of the state treasury.

SECTION 363. The transactions of the State Horticultual Society shall be distributed as follows: Five copies to each member of the legislature; fifty copies to each town or county horticultural society that shall report its organization, with officers elect, number of members, and an abstract of its proceedings, for publication in said volume, to the secretary of the State Horticultural Society; fifteen copies to each county agricultural society reporting to the secretary of state; fifty copies to the State Agricultural Society; fifty copies to the State University; twenty-five copies to the State Historical Society; and all remaining copies to the State Horticultural Society. * * * The number of printed pages of the transactions * * * of said horticultural society shall not exceed two hundred; and all such transactions shall be printed on good book paper and bound in muslin covers, uniform in style with the previous volumes published.

Chapter 151, *Laws of* 1879.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactions of the society, including an itemized account of all moneys expended during the year, in addition to such matters as are now specified in the law relating to the same.

SECTION 7. The number of printed pages of said report shall not exceed three hundred and fifty, and the number of copies shall be limited to three thousand and five hundred. In all other respects, the publication and distribution of said report shall be in accordance with the provisions of the law now in force concerning the same.

LAW RELATING TO TREE BELTS, REVISED STATUTES 1878.

SECTION 1469. Every owner or possessor of five acres of land, or more, who shall successfully grow by planting with forest trees, consisting of the

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following kinds, or such species thereof, as will grow to the height of fifty feet or more, viz.: arbor vitæ, ash, balsam, fir, basswood, beech, birch, butternut, cedar, black cherry, chestnut, coffee tree, cucumber tree, elm, hackberry, hemlock, hickory, larch, locust, maple, oak, pine, spruce, tulip tree, and walnut, tree belts in the manner and form prescribed in the next section, shall be entitled to have the land on which such tree belts grow, exempted from taxation from the time the trees commence to grow until they shall reach the height of twelve feet, and after they shall have attained that height, to receive an annual bounty of two dollars per acre for each acre so grown.

SECTION 1470. Such tree belts shall be planted on the west or south sides of each tract of land, be of uniform width throughout their entire length, contain not less than eight trees, at nearly equi-distance, on each square rod of land, and be at least thirty feet wide for each five acre tract, sixty feet wide for each ten acre tract, and one hundred feet wide for each square forty acre tract, and upon all square tracts of land, upon two sides thereof. All tree belts owned by the same land owner must be planted not to exceed a fourth of a mile apart, and on the west and south sides of every square forty acres, and shall not exceed one-fifth of the entire tract of land on which the same are planted; provided, that when the east and north sides, or either, of any tract of land, is bounded by a public highway, a tree belt one rod wide may be planted next to said highway, although it, with the others on the west and south sides, shall exceed one-fifth of the whole tract; and tree belts may be planted on any other lines within each forty square acres, by permission of the assessor.

SECTION 1471. The assessor shall, upon the application of the owner thereof, in each year, at the time of assessing the personal property in his district, make a personal examination of all tree belts for which bounty or exemption from taxation is claimed, and ascertain whether they have been planted as required in the preceding section, and are thriftily growing, and if he shall be satisfied thereof, he shall not assess the same for taxation unless the trees therein shall have attained the height of twelve feet, and in that case he shall deliver to the owner a certificate that he is entitled to an annual bounty of two dollars for each acre of such tree belts, stating therein the whole amount of such bounty, and giving a description of the entire land of which the tree belts form a part, and the amount of such bounty shall be credited by the treasurer in payment of any taxes assessed on such land, as so much cash; but if not so satisfied, the assessor shall assess the land for taxes or refuse to grant any certificate for the bounty, as the case may require; and if, after any certificate for such bounty shall have been issued, the owner of any such tree belts shall suffer the same to die out by want of cultivation or otherwise, or shall cut the same down, or in any other way allow the same to be so thinned out, that in the opinion of the assessor he ought no longer to receive such bounty, he shall give the treasurer written notice thereof, and thereafter no further bounty shall be allowed until such owner shall again receive a certificate therefor.

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PROCEEDINGS

AT THE

SUMMER MEETING

OF THE

WISCONSIN

STATE HORTICULTURAL SOCIETY,

Held at Green Bay, June 26, 27, 1878.

In compliance with the action taken by the Wisconsin State Horticultural Society, at its annual meeting in February, accepting the invitation of the Brown County Horticultural Society to hold its Summer Meeting at Green Bay, the two societies met in joint convention, at Klaus' Hall in that city, June 26 and 27, 1879.

At 10 o'clock A. M. the convention was called to order by J. M. Smith, president of both organizations.

Prayer was offered by Rev. Wm. Crawford, of Green Bay.

A very appropriate song was sung by a quartette, consisting of Mrs. M. D. Kimball, Mrs. Reynolds, Miss Abbie Young and Mr. Davis.

The president then delivered his opening address, as follows:

HORTICULTURE — ITS MISSION AMONG OUR HOMES.

Ladies and Gentlemen — What would our homes be without horticultural surroundings? Many of you have seen such ones in our new country; and some have seen them at the East, where the owner had abundant means to adorn and make it beautiful.

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I remember one such, whose owner had a fortune that run into the hundreds of thousands. He despised flowers as a useless waste of both time and money. He wished for "no useless gewgaws around him." His house was not painted. It stood amid the rocks upon a hill side, where the soil was as poor and as barren of beauty as its owner was poor and barren in spirit. Hogs, cattle, sheep and poultry had an almost undisputed range in and about his dooryard. The trees about him were the remains of the original forest, that were useless for timber, and of but little value for fuel. He claimed to be a kind of a farmer, but never had a garden. He could afford to dress not only well, but very handsomely, yet he went about among his fellow men almost in rags. He could well afford to make his home beautiful; to make it a place where his wife and children might enjoy themselves, even though he had no desire or taste in that direction. In his temper and disposition, about his business, to his family, his hired men, he was as destitute of refinement as his home was of beauty. If he had ever in his young days possessed any love of the beautiful, or any desire for a cultivated and refined manhood, he had allowed his insatiate greed for money to crush out and destroy not only that, but all of his better nature. His wife lay down and died when she had hardly reached the noonday of life. His children left a home that was destitute alike of either beauty or happiness. Still he lived on to old age, cold, stern, hard, and apparently as unfeeling as the granite boulders that surrounded his home. The last time I was East, I passed by what had been his residence. It looked as if smitten by the curses of both God and man. The old sawmill that had stood near his house was rotting down, and looked as if it had lain down its life with its hard-hearted owner. Not even a lilac bush was there to tell that some one had once had even a faint desire to beautify and adorn a home.

What is such a life worth? What is such a home worth? I was told that he left a fortune of $250,000; but that was all he left, simply his money. He had money, but he never, in the true sense of the word, had a home. The world was full of beauty, but he never saw and appreciated it, any more than if he had been

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born blind. Horticulture, with its refining, educating, and ennobling influences was to him a sealed book; and when he laid himself down to die, he could not truthfully have said, "there is one little spot on earth that is brighter, happier, and more beautiful for my having lived upon it."

Let us turn for a few moments to another home. A number of years since, a young couple sought a place to make a home upon the rolling prairies and oak openings of Wisconsin. They were not rich; in fact, they are not rich in money to-day; but they were young, and were willing to do as many thousands in our Northwest have done, make their own home, and earn their own fortune. With loving hearts, and steady trust in their own ability and industry, they commenced their life's work. A few years since it was my good fortune to be the guest of that family for a short time. The residence was neither large, nor in any way extravagant. Still it was a beautiful spot. A few of the native oaks were still standing, although the front, from the house to the highway, was almost entirely filled with trees that had been set out, and among them were a number of beautiful evergreens. A little brook made its way between the house and road. Trees and shrubbery were all around the house. At a little distance from it were fruits, consisting of apples, grapes, currants, strawberries, raspberries, and in fact all the fruits suited to our climate. The farm was splendidly cultivated. Barns, outbuildings and stock, all in splendid condition. Within this happy home there was no extravagant furniture, and no costly outlay of money. A small but select library, with papers and magazines, told at once of their taste during their hours of leisure. It was a home of beauty in its surroundings, and one of true love and happiness within. It was almost my idea of a farmer's home. I need not tell you that its owner is devotedly attached to horticulture, although he does not neglect his farm for it. In fact, his farm is doubtless better cultivated than it would be if he cared nothing for the beauty of his home.

Friends, which of these homes do you prefer? In an audience like this, I imagine there could be but one answer. But it may be said, these are two extreme cases. That is doubtless true; but

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the last described one is by no means beyond the reach of thousands of our farmers in all portions of the state. Then why do we have so many places, that, instead of being really and truly homes, are only buildings, where families are sheltered from the heat in summer, and the cold in winter; where they eat, and sleep, and spend their leisure hours, provided they have no other place to go. This is not as it should be. There are few territories of equal extent upon this earth where a kind providence has placed such a combination of circumstances, favorable for making pleasant and happy homes, as in our Northwest. In very many districts the new settler has to struggle for years merely for the necessaries of life. In the larger portion of our state we have passed that point, and there is time and means to improve and adorn our farms, our cities, and our villages.

It is the mission of our society to take the lead in these improvements. We should be first and foremost in this good work. It is perhaps not so much to tell others how they may add dollars to their bank account, as to tell them how to add trees, fruits, and flowers to their homes; advise and encourage them in those things that will add to the beauty without, and the happiness within them. It is for the purpose of teaching our citizens how to avoid the utter desolation of the rich man's residence, described in the former portion of this paper, and help them to such knowledge as will enable them to imitate, to some extent at least, the home of the Wisconsin farmer, that you are here to-day. This is what is expected by our citizens, and as far as the time allows they will doubtless have their wishes gratified.

This county, as well as a number of the adjoining ones, have but barely got through the transition state. A few years since an immense body of timber covered nearly all this portion of the state. It is nearly gone; and our citizens have found a wealth of soil beneath their feet, that was hardly dreamed of twenty years since. Your work here, then, is to teach us how to make these new homes beautiful and happy. They are springing up in all directions. Some of them have been here many years, but thousands of new ones have been commenced within the last five years. But all alike, both old settlers and new ones, will either

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listen to, or read what you have to say. We know that we have a goodly land. We hope that the effect of the good words spoken while here will be both seen and felt for many years to come.

Another summer, when we, or some of us, meet again in some other portion of the state, perhaps hundreds of miles away, may we not impress upon the citizens there the same lessons that we expect here, and thus, as we meet year after year, in one place after another, make this society known and felt as a great power for good in all portions of our beautiful Wisconsin. If we thus work it cannot be all in vain. The good effects may be long in coming, but come they must, and come they will. Italy has no fairer skies, our own country no more healthy clime, than those which are over and around us.

Then, friends, let us work on, as best we may, and while our state is yet young, let us lay the foundations, sure and well, and though we may not see all that we desire, still we may surely believe that we are not living entirely in vain; and we will trust and hope that the time is not very far in the future, when it may be said of us, no country has any nobler sons, or finer or more worthy daughters, and the world no better, brighter, or happier homes, than are found in our own Wisconsin.

The president then introduced Senator Howe, who was commissioned by the citizens of Green Bay to tender the state society a cordial greeting and words of welcome. The senator, in substance, delivered the following

ADDRESS OF WELCOME.

It is a difficult, though at the same time a delightful task that has been assigned to me, to welcome to this ancient city of Green Bay a society or association of men whose habits and pursuits in life are so different from my own; difficult because it is hard to know just what to say on such an occasion, and delightful because of the opportunity it affords of extending the hand of brotherly greeting and hospitality of our citizens to those who have left their homes and business in so good a cause as the one which has brought us together. No matter what I may say, or what I should say, what I wish to say in performing the pleasant

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duty assigned to me is to proffer you a hearty welcome. I am glad to see you; we are all glad to see you here. Do not distrust this because there are so few present this morning to corroborate it. Its truthfulness will be made manifest before the close of the session.

We have been expecting you; waiting for you for a long time; do not know how long; perhaps it would be safe to place it as far back as 1663, over two hundred years. Historians do not agree as to the date when the pale faced race first occupied this country. It was sometime about the reign of Louis XIV, of France. The religious devotee first came to these shores. This was right, for the Savior has said, "Seek ye first the Kingdom of Heaven." This was the first work done here; the first crop put in. It may have been a light one, but many since have been fully as light. Other things had a predominating influence. The followers of the good pioneer derived greater satisfaction from seeking after the valuable furs with which the country abounded than from converting the Indian. The beaver and the muskrat were sought. The crop of furs was harvested and the hunters left for other hunting grounds. Then came the lumberman to harvest the forests; the pines have been gathered in and the lumberman's occupation is gone. The savages and other sinners have, perhaps, been generally converted; the timber has certainly all been cut off, and now we have come back, under the farmer, to our common mother Earth, from which we all sprong, and on which we still depend. Our career has been a long one, though not remarkable for its brilliancy, it must be confessed. We are still in the transition state, and are glad that you have come to tell us about horticulture.

A year or two since, you held a convention at Tomah, a name which commemorates the noble chief of the Menomonies, the tribe of red men who formerly held possession here, and one whose memory should have a place in the hearts of all lovers of peace and home. In early times, a council was held by these natives of the forests, in this region, to take council in relation to united action in checking the onward march of the pale faces. At this meeting Tecumseh and Tomah were present. Tecumseh, with

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remarkable foresight saw that the wave of civilization and the tread of the white race was slowly but surely moving westward, and that the Indian races were doomed, unless the tide could be resisted. He sought to arouse the tribes to a sense of the common danger and to form a confederacy to make one last effort for their common safety. With all his impassioned eloquence he set forth the common peril, the necessity for united action; he related his glorious achievements in war, his heroic exploits and brave deeds, and inspired his Indian audience with the same warlike enthusiasm. At length Tomah arose; he was a man of peace; the instructions of the "fathers," had not been in vain. Stretching out his hands before the council, he gave utterance to these simple words, "It is my glory that these hands have never been stained with human blood." That simple sentence touched the heart of the swarthy crowd, and changed their warlike enthusiasm to thoughts of peace. It is fitting that we, engaged in peaceable pursuits, and gathered here to consult in regard to things calculated to increase the comforts and pleasures of our homes, should recall these incidents connected with the early history of these shores.

But to return to the subject of my mission. I would repeat, we are glad to see you, and in the words of Cardinal Wolsey, "once more I shower welcomes; welcome all."

Mr. J. S. Stickney had been expected to respond to the welcome given, but was detained at home by illness in his family, and Mr. J. C. Plumb replied briefly in behalf of the society; saying, that being called upon in this unexpected manner, he was not able in fitting words to express his gratification, and the thanks of the society, for the warm and friendly reception given, but in feeling, he could heartily respond. It was gratifying that so many were present to listen to these words of welcome; to see here so many from different parts of our own state, and also representatives of the old Puritan stock of New England. He was surprised to learn that the citizens of Green Bay had been looking forward to this meeting for over two hundred years, and was much afraid that many of the expectations thus aroused were doomed to be disappointed. In behalf of the society he would

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return their sincere thanks for the cordial words of greeting to which we had listened grape growing was presented in a plain, familiar talk and practical manner by C. H. Greenman, of Wauwatosa.

GRAPE GROWING.

C. H. GREENMAN, WAUWATOSA.

I have not written out a paper, but will give you a few practical ideas on this subject, the result of my own experience. It is surprising that so few grapes are raised by our farmers. With a comparatively small expenditure of time and labor all, or nearly all, might have an abundance of this delicious fruit for family use. When the best method of cultivation is once learned, it is easy to practice, and success is usually certain.

Care should be taken to get a soil adapted to the healthy growth of the vines. Good corn land, of moderate fertility, is the best. I prefer a clay loam. Use but little manure, if any. A very rich soil produces an excessive growth of vine.

It is essential to success, to get good vines; a strong, vigorous cane, with plenty of fibrous roots. Vines two years old are the best. Set them in rows six or eight feet apart, and the same distance apart in the row. In setting, special reference should be had to winter protection, setting at an angle of 45°, so that the canes can easily be bent down for covering in the winter.

The first season, allow only one cane to grow; select for this the strongest bud, and let it grow unchecked. Rub off the other buds, and pull off all suckers that may start out from the root, or on the cane, near the ground. Do not permit these suckers to grow at any time, for they rob the vine of its strength. When the frost has killed the leaves, at the close of the first season, cut the cane back to three buds, and before winter sets in, bend it down and cover.

The second season, follow the same course as the first; permit only the strongest bud to grow, and let it grow to its full length. At the close of the second season, you should have a strong, vigorous cane. Cut this back, leaving only about two feet, and give winter protection as before.

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The third season the buds left on the main cane will develop fruit spurs. These should be checked in their growth, three or four leaves beyond the last fruit cluster. This should be done by pinching off the tip of the spur while young and tender. Do not allow it to grow to great length and then cut back. This checking of the growth of the spur will force out the lateral buds in the axils of the leaves; these should all be pinched off, except the last one; allow that to grow to a moderate length, to prevent the forcing of the next season's fruit buds. This pinching back the laterals throws the growth into the fruit cluster and the leaves above it, increasing greatly their size. It is no particular benefit to the fruit, either in size, color or flavor, to have the sunshine fall directly on it. Think it is *better* to have it shaded, and therefore prune so as to have leaves enough above the fruit to protect it from the sun, and to assimilate the sap for the fruit clusters.

Each year cut back the bearing wood to three buds, and cover every winter. This winter protection is very important. It not only adds greatly to the certainty of the crop, but it also secures a much greater yield than we would otherwise get.

The first and second seasons, the canes may be tied up to a single stake, but after this, it is better to use three stakes or a trellis. Anything is good that lets in plenty of light and air. In regard to use of trellis and the renewal system of pruning, see my article in last year's report.

I have 1,700 vines in my vineyard; of these, 1,200 are the Janesville. It is hardy, and ripens early. Its quality may not be as good as some other varieties, but I raise it for the dollars and cents. As it ripens early, it comes into the market before it is overstocked, and hence brings much better prices. My vineyard has been set out four years. The land was then filled with stumps and grubs. Now the vines are healthy and strong, and if nothing happens I shall market from 7,000 to 10,000 pounds of fruit this season. I have not applied any manure to my vineyard, but mulch the vines with marsh hay. I cover in the winter, and leave the covering on in the spring as late as possible. When the buds begin to swell and cannot be kept back any longer, I take them up and fasten to the trellis.

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FUTURE PROSPECTS OF FRUIT.

G. J. KELLOGG, JANESVILLE.

Ladies and Gentlemen — Without my knowledge or consent, your president has put me on the programme. And since the programme was received, I have been too busy among the fruit to write, and hence the chief excellence of my paper will be its brevity.

"The future prospect" must be judged by the past, and *indomitable perseverance* is the price of success. The planter must have a good location, knowledge, common sense, backbone, muscle, money, a very large development of the head just over and behind the ears, a good double barrel shot gun and a bull-dog. With all these requisites, I would first advise him to plant largely of Early Rose and Brownell potatoes; from these he will raise his first crop of apples, and he can have them in July, too, the first year. Next I would advise him to plant a strawberry bed, two rows each, of Crescent, Wilson, Captain Jack, Early May, Red Jackets, Sharpless, Col. Cheney and Kentucky. Now if the rows are long enough, or the family not too large, you may expect to sit up nights and eat strawberries.

If planting for home market, set two rows each of Crescent, Wilson, Green Prolific and Sharpless, as long as the money, plants and land last. I would advise to set two rows alternately, as all varieties are improved by cross fertilization.

A word about the varieties: Crescent—with me one row nineteen rods long, planted in 1878; plants three feet in the row, gave a fine picking, June 14, 1879, and June 16th, one boy picked one hundred quarts from the same row in nine hours; and again it gave large pickings the 18th, 21st, 24th and 26th. Set Wilson for distant market and canning; Green Prolific for bushels and home market; for vigor and productiveness it is not surpassed by any except Crescent and Capt. Jack. The last variety will not do to ship long distances, unless the stem is nipped off in picking, as nine out of ten berries will leave the calyx on the vines; otherwise it is as firm as Wilson, good quality, more vigorous and productive, and I do not know of a more satisfactory home

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berry for all purposes, next after Crescent. I have thus dwelt more at length on the strawberry, because it is in season and appropriate to the occasion. Of the new varieties we shall hear again.

Of raspberries, black, plant Doolittle, Mammoth Cluster, Great Western, Miller's, Dailey and Gregg. I have a new seedling from which I shall pick more bushels than all else this year; season and appearance, of Doolittle, but more hardy, vigorous and productive.

Of red raspberries, plant for field culture, Cuthbert, Turner and Brandywine. Philadelphia has killed worse with me the past winter than either of the above, except where the plants were cut back in August.

Blackberries — Snyder, Ancient Briton and Western Triumph.

For a list of one hundred apple trees for family use, take Stickney's list and you will not forget the kinds — ninety-nine Duchess and one Duchess of Oldenburg; and when you plant the next hundred trees you will do well to see what kinds are doing well and paying in your neighbors' orchards. But don't forget, never, no, never, to plant largely of Early Rose, with which to lay in your winter apples.

In conclusion, Mr. President, we can raise apples at twenty-five cents per bushel, strawberries at two cents per quart, and pears at ten dollars each in southern Wisconsin, and we expect to raise the Bassett plum at two shillings per bushel.

THURSDAY, 2 P. M.

The society was called to order by the president, and a brief discussion followed on the subject of fruit prospects, as presented in Mr. Kellogg's paper, deprecating the discouraging views therein expressed, and asserting that we are not tied up to any one variety; that by a proper selection of location and soil, there are many varieties of apples that can be raised with success. The higher locations, with a soil of moderate fertility, are best adapted to promote hardiness and fruitfulness, and if Mr. Kellogg's paper was the result of his own experience, he had better "make a break" and "flee to the mountain," where he can raise apples.

In reply to inquiries, Mr. Tuttle corrected a mistake which had appeared in the last Agricultural Report, by which he is made to

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say that he had lost faith in the Walbridge. He thought it was a good apple, hardy and productive, and could recommend it heartily as a late keeper, and as coming at a season when other kinds are gone. We need something of a better quality, which shall fill the place with us, that the Baldwin does in Michigan and at the East. Until we find that variety, he should hold on to the Walbridge.

INJURIOUS INSECTS.

By Miss EMILY C. SMITH, Peoria, Ill.

THE TRUE ARMY WORM — (*Heliophila Unipuncta*). Perhaps no insect except the Rocky mountain locust (*Caloptenus spretus*) has attracted such attention and caused such alarm as the army worm. Much damage, the result of other insects, is attributed to this, and for this reason I have deemed it best to devote a few moments to a short sketch of the life of two moths; the true army worm and the false, or one generally mistaken for it, the *Clisiocampa Americana*.

We have record of the depredation caused by the *Heliophila unipuncta*, from Flint's recond report on the Agriculture of Massachusetts, where it is stated that in 1743 "there were millions of devouring worms in armies, threatening to cut off every green thing." In 1770 it spread over New England in alarming numbers. Nothing like them had ever been seen before. They went up the sides of the houses, and over them, in such compact columns that nothing of the boards and shingles could be seen. Pumpkin vines, peas, potatoes and flax escaped their ravages, but wheat and corn disappeared before them as by magic. Fields of corn in the Haverhill and Newbury meadows, so thick that a man could hardly be seen a rod distant, were in ten days entirely defoliated by the Northern army. Trenches were dug a foot deep around fields, as a defense, but they soon filled them and millions in the rear passed on, and took possession of the interdicted feed. Another expedient was resorted to: Trenches were cut, and then sticks, six inches in diameter, were sharpened and used to make holes in the bottom of the trenches within two or three feet of one another, to the depth of two or three feet in the bottom lands, and when these holes were filled with worms,

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the stick was plunged into the holes, thus destroying the vermin. In this way some corn was saved. About the first of September the worms suddenly disappeared. Where or how they terminated in their career is unknown, for not the carcass of a worm was seen. Had it not been for the pumpkins and potatoes, the people would have suffered for food.

In 1781, 1790 and 1817 they appeared again, but not in such alarming numbers. It was not until the year 1861 that this worm again spread over the meadows and grain fields of the eastern states, and this year will long be remembered as a remarkable army worm year, since throughout the whole northern and middle portion of the United States from New England to Kansas they were observed. Up to the year 1861 our knowledge of the natural history of the army worm had remained a blank. Nothing indeed of a scientific nature had been published respecting it, but its appearance throughout the country at that time caused not only the usual investigators on economic entomology, but the attention of farmers and friends, interested in the salvation of their crops, to be drawn thereto, and many new and valuable ideas were advanced which time has proved correct.

The general color of the full grown worm is dingy black, and it is striped longitudinally, as seen in the accompanying cut. The chrysalis is of a shiny mahogany brown color, with two stiff converging thorns at the extremity, having two fine curled hooks on each side of them. The general color of the moth is

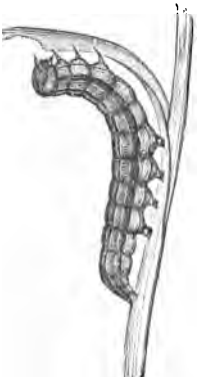

FIG. 1.
Larva of Army Worm.

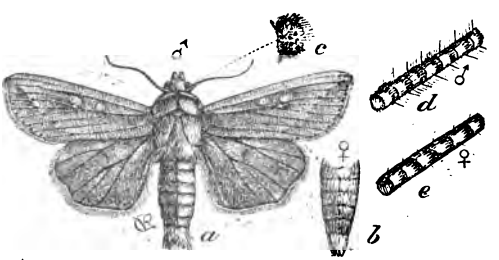

FIG. 2.
Army Worm Moth.

light reddish brown, or fawn color, and it is principally characterized by, and receives its name from, a white spot near the center

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of its front wings, there being also a dusky oblique line running inwardly from their tips. The eggs are laid along the inner base of the terminal blades, where they are yet doubled, says Mr. Riley. The female having once commenced to lay, is extremely active and busy, especially during warm nights, and it is thought that two or three days are required to empty the ovaries, which have an uniform development. It is thought that the eggs are laid by the end of April, and that in some states it is double brooded, while in others single.

Each year they are found in greater or less numbers, and they can be found almost any night, but the traveling of the worms in large armies is abnormal. During the latter part of April, and throughout the month of May, the worms may almost always be found by diligent search in moist grass land. Oftentimes they are entirely overlooked until their presence is observed by the cutting of a plot of grass. The reasons why they so easily escape detection in this their normal condition is, because, as Mr. Riley tells us, when they are less than half an inch long, they are scarcely recognizable as Army worms, the characteristic dark, sinuous lines on the head, being at this time obsolete, and the general color being pale green. The color is very variable in the early stages of growth, and in some individuals the brown predominates while they are yet quite small; but up to the last moult the green generally prevails, and the longitudinal dark lines are the most persistent, being distinguished when the insect is

FIG. 3. MOTH.
Orchard Tent Caterpillar.

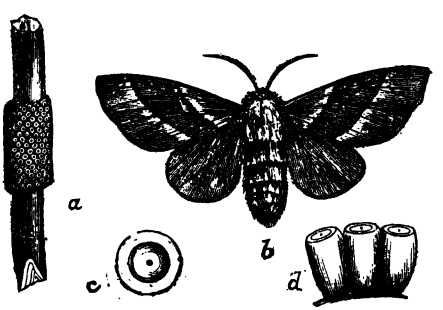

FIG. 4.
FOREST TENT CATERPILLAR.
b. Moth; *a. c. d.* eggs.

NOTE. — Figs. 3 and 4 are inserted here, so that the distinguishing features of each may be seen more readily.

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a quarter of an inch long. The worms, in this their normal condition, feed mostly at night, and hide during the day at the base of the grass, or under any other shelter at hand. If they venture to mount a plant and feed during the day, which they often do in cloudy weather, they drop at the least disturbance, and curl up in a spiral. It is only when hunger impels them that they march forth from the fields where they were born, though after they have once begun the wandering habit, they often pass through fields without eating everything to the ground. When the worms have reached their full growth, most of them burrow into the ground and form a simple cavity, a few inches below the surface, in which to undergo their transformations; many of them transform beneath loose stones, slabs of wood, matted grass, or any other shelter offered.

Of the plants preferred by the army worm, we find the grasses and cereals, although, when occurring in very great numbers, they are known to eat onions and other vegetables, and even the leaves of trees. Of cultivated crops, they do most injury to timothy and blue grass meadows and winter wheat. Rye, clover and wheat suffer somewhat, but are not as palatable as the coarse swamp grasses. If we may justly conclude that the natural abode of the worm is in our low prairie lands and swampy places, it follows that, during a very dry season, when such lands dry out, the worm has a wider range than usual, when the conditions for its successful development are favorable. It is a well established fact that all great army worm years have been unusually wet, preceded by one or more exceptionally dry years; and the widespread appearance of the insect in 1875 formed no exception to the rule. The insect is with us every year, and often attracts considerable attention, in restricted localities, the year preceding its more general advent.

NATURAL ENEMIES. — Hogs, chickens and turkeys are found to feed upon the worm, and sometimes to such a serious extent that it becomes a self injury. A number of our large predaceous beetles also greedily prey upon them; these together with the natural parasites seem to keep them under subjection in other than the years when they occur in unlimited numbers. Among

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the beetles may be found the *Passamachus elongatus*, *Harpalus calignosus*, *Calosoma caldium* and *Calosoma scrutator*.

REMEDIES. — Mr. Riley in his excellent treatise suggests, by way of prevention, the burning over of meadows, prairie or fields of stubble in the winter or spring, and states that by thus doing, we may guard against the breeding of the worm in such meadow or field. Such burning necessarily destroys the eggs that may have been laid in the fall of the year and leaves no material for their deposition the following spring. The worms may be prevented from passing from one field to another by judicious ditching. It is important, however, that the ditch should be so made that the side towards the field to be protected be dug under. About every three or four rods a deep hole in the ditch should be made, in which the worms will collect, and then they can be killed by covering them up with earth and pressing it down. They may also be destroyed by burning straw over them, the fire not only killing the worms, but rendering the ditch friable and more efficient in preventing their ascent. Coal oil may be used, since the worms have a great antipathy for it, and will not pass over a streak of it. Instances are cited where they were successfully headed off by a furrow plowed six or eight inches deep, and kept friable by dragging brush through it. Along the ditch or furrow on the side of the field to be protected, a space of from three to five feet might be thoroughly dusted (when the dew is on) with a mixture of Paris Green and plaster, or flour, so that every worm which succeeds in crossing the ditch will be killed by feeding upon plants so treated. This mixture should be in the proportion of one part of pure Paris Green to twenty-five or thirty parts of the other materials named. If used in a liquid form, one tablespoonful of Paris Green to a bucket of water, kept well stirred, will answer the same purpose. Care should be taken that it is not used where there is danger of poisoning animals.

EUROPEAN CABBAGE WORM (*Pieris rapæ S.*). — Among other insects which have made their apperance to a serious extent, the cabbage butterfly is prominent. Much has been written on the habits and destruction of this insect in the eastern states, and each year entomologists have apprehended its appearance in the

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west, but it was not until 1877 noticeably common, and in the center of the state of Illinois, 1878 first witnessed the power of its destructiveness. The life history of the insect, briefly stated, is as follows: For many years it has proved a great impediment against raising plants of the *Cruciferæ* family in England, but it was confined exclusively to Europe until the year 1859, when Mr. Bowles captured specimens in the vicinity of Quebec, they having been conveyed thither, in the larvæ state, on heads of cabbages. Since that time they have spread with great rapidity; becoming acclimated at once, and being wonderfully prolific and hardy, have come to be considered one of the most destructive of insects.

The eggs are placed indifferently on the under side of the leaf; sometimes appearing upon the leaf stalks; are very small and but slightly attached to the leaf; are not readily perceived, since they differ but slightly in color from the leaf itself. These eggs hatch in about one week after they are laid, the young worm eating an opening through the shell of sufficient size to enable it to crawl therefrom. The first act of the young worm is to eat the shell of the egg from which it has been hatched. Dr. Fitch, the eminent entomologist of New York, states that this act requires five hours, when the worm remains at rest for a few hours. The young insect finds itself at once upon its food plant, and weaves for itself a mat or carpet, upon which it remains while partaking food. This mat is made from threads of exceeding fineness, and comes from the glands on either side of the alimentary canal, of which it is in reality an appendage. These threads issue from the mouth and are fastened, at short intervals, to the leaf, until a thin film is formed sufficient in thickness to enable the insect to secure a firm grasp upon the leaf. If nothing occurs to drive the worm away, it remains in this position until the food is exhausted within its reach, when it moves to a fresh spot and again constructs a footing of silk.

The caterpillar moults three times, is then one and a half inches long, pale green, finely dotted with black, a yellow stripe down the back and a row of yellow spots along each side in a line with the spiracles. When about to transform, it leaves the plants

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on which it has been living and fastens itself on the under side of some stone, plank or fence rail, where it changes into the chrysalis or pupa state, from which the butterfly emerges later. In the summer, the insect remains in the pupa state one week only, thus making its transformation from the deposition of the egg to the imago in four weeks, since the development of the embryo requires one week, and the larval form is completed in a fortnight. This is, however, only when everything is favorable, since they have been known to remain from August 21 to December 8, or 109 days, in the pupa form, and Joseph Le Admiral succeeded in retaining one specimen from September 5 to May 28, or 265 days. The butterflies are generally supposed to hybernate during the winter months, but the instance cited above prove a variation. I am inclined to think the insect varies with the locality, since those bred by myself, in Peoria, during the years 1877 and '78, remained without exception in the pupa state, and many chrysalides were gathered from their covered retreats during the winter months, and on the approach of warm weather changed to the imago. The reason attributed for the hybernation of the butterfly was, because the chrysalis was without a covering or protection. There are two broods each year.

FIG. 5.
EUROPEAN CABBAGE WORM.
a. Full grown larva; *b.* Chrysalis.

A prominent trait of the insect is the quiet, peaceful disposition of the larvæ. They avoid intrusion, and do not encroach upon each other, or upon insects of other orders. They are capable of withstanding great hardships; are not affected by changeable weather, and neither degrees of temperature or privation of food for a time affect them. This remarkable tenacity to life renders artificial remedies less effectual, and hellebore, lime, ashes, and various proposed plans which prove so efficacious with the Tenthredinous larvæ have no effect upon these. The French call it the "Ver du Coeur," or heart worm, because they bore into the heart of the vegetable, and do not confine themselves to the outer leaves. The butterflies have the bodies black above, with the

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wings white, and marked differently in the two sexes, the female being distinguished from the male by having two round spots (sometimes three) instead of only one on the front wings. The under side of the wings of both sexes are alike, there being two spots on the hind ones, which are yellowish, sometimes passing into green.

Most fortunately, nature has provided many natural enemies to the larvæ of *Pieris rapæ*, whereby they are duly restrained. With their arrival in this country, there came also parasites, the most common of which is the *microgaster glomeratus*. This minute fly punctures the skin of the cabbage worm in from thirty to sixty places, inserting an egg in each puncture, from which a maggot hatches, which feeds internally upon the worm,

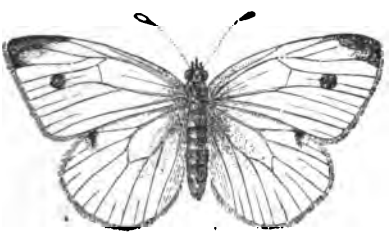

FIG. 6. MALE MOTH. EUROPEAN CABBAGE WORM.

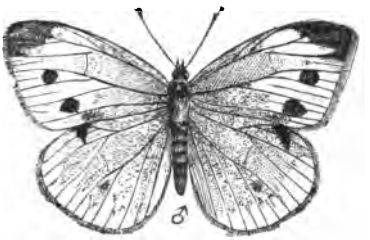

FIG. 7. FEMALE MOTH. EUROPEAN CABBAGE WORM.

weakening it to such an extent that it dies immediately after these maggots have gotten their growth and issued. Another important parasite is the *Pteromalus puparum*. This insect, on finding a newly formed pupa, places upon its surface her whole stock of eggs, to the number of two or three hundred. The very small maggots which hatch from these eggs eat into the pupa, and then, completing their transformation in two weeks, small flies emerge, and commence searching at once for other pupæ, in which to deposit eggs for their next progeny. Besides these two parasites, various species of small spiders subsist upon them, together with members of the *Coccinellidæ*, or lady-bird family.

Remedies. — It has been suggested that some advantage may be taken of the fact that the caterpillar leaves the cabbage for some sheltered place in which to undergo their transformations, by placing boards, that are raised a little from the ground, among the

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infested plants. By examining these boards every five or six days, and destroying the chrysalides, the future work may be very materially lessened. Where there are but few infested plants, the caterpillars may be destroyed by hand, but since they eat into the solid part of the cabbage, it would be better still to destroy the entire plant, by either feeding to stock or burning, as after the denudation by the insect, the market value of the vegetable is destroyed.

In addition to these devices, the butterflies that are seen flying over the cabbages may be caught, thereby preventing the deposition of eggs.

THE MAPLE BARK-LOUSE (*Pulvinaria Innumerabalis*). Throughout northern Illinois the trees belonging to the genus *Acer* have been severely injured by an insect commonly known as a bark-louse. Although the soft maple, *Acer dasycarpum*, is regarded as an inferior tree to many others, as a shade, yet it is grown quite extensively, because of its rapid growth and generous shade. It is ordinarily the first to be affected with the insect above mentioned, and they then spread to other species of the same genus. The natural history of the insect is as follows:

Early in the month of May, the attention is attracted to the ground or sidewalks underneath the infested trees, which are covered with spots similar to honey-dew, the lower limbs and opening leaves presenting a sticky sensation to the touch, which continues to be noticeable for something over a week, when it suddenly ceases. This is caused by the insects puncturing the bark of the tree, and the overflow of sap which occurs in early spring. Soon after the honey-dew ceases, a white, cottony substance is seen issuing from the posterior part of the female, and enveloped in this mass the eggs are deposited. This secretion issues from the under surface generally, but particularly from the thorax and abdomen. Upon examination with a common lens, short, thick hairs may be seen around the sides of the female, and it is from these and between the abdominal joints that a portion of the waxy mass is secreted, but from around the arms come the greater quantities. In this mass the eggs are concealed, the work going on regularly, since we find the first eggs in the mass shortly after it is per-

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ceived; and the insect continues partaking of the sap during the enlargement of the egg mass. The secretion at first is soft and easily drawn out in threads, but hardens somewhat by contact with the air, and remains almost perfect in form on the limbs after the eggs have all hatched.

The beak itself is a long, thread-like organ. The first pair of legs are nearly opposite the beak; the head and thorax occupying over one-half the entire insect. The eggs issue from the oviduct which has the opening at the posterior portion of the fissure, and are concealed within the waxy mass, the particles dividing them from each other. When the eggs first appear, they are soft and pliable, one end more rounded than the other, but as the embryo develops, the color, which at first was yellowish-white, becomes darker. The eggs first deposited and consequently that lie farthest removed from the body are the first to hatch, and this commences before the ovi-sac is emptied. The oviposition of eggs continue about five weeks, and number something over five hundred. The body of the female does not shrink in size as is observed in other species of bark lice, but appear much the same as when just commencing her labors. When the ovi-sac is emptied, she withdraws her beak from the limb and dies; the dead body remaining attached to the limb by means of the cottony secretion. The antennæ and six legs are retained, although in a rudimentary condition. No trace of the eyes can be found. When the female is removed from the limb in the spring, before

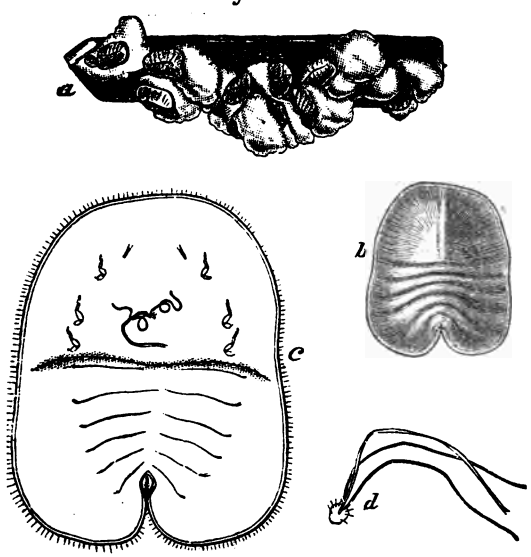

FIG. 8. FEMALE LOUSE.
b. Dorsal view. *c*. Ventral view. *d*. Beak.

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the waxy mass has commenced appearing, the insect will move slowly, showing that although the legs have ceased to grow with the body, yet they are not entirely useless.

The young lice make their appearance about June 15, and are light, sordid yellow, translucent, elongated oval, tapering slightly toward the posterior end, with seven abdominal segments. The antennæ are situated in front of the eyes, and from mounted specimens I make twelve joints. Eyes compound, prominent, dark, convex, and situated at extreme sides of the head. The beak is long, thread-like, and arises from a projection at the extreme end of the head and from between the first pair of legs. At the end of the abdomen there projects two oval appendages, longer than the entire body, which disappear in a short time. The six legs are equi-distant from each other.

In the natural condition, the young insect settles down upon the leaves of the maple almost immediately after hatching, the preference being given the under side and near the midrib, although they are found upon the upper side to some extent; this is entirely owing to the number of insects upon the tree. When in a state of rest, the young lice draw the antennæ under and parallel with the last joint of the fore pair of legs, the two remaining pair extending backward. During the summer the young insects increase in size, and continually grow darker. They moult several times during their growth, and do so by shreds of skin peeling off and not cast off entire, as in the usual way. Although they seldom leave the position first assumed, during the summer, they have full use of their legs, since when the leaf is detached from the tree, the young lice will withdraw their beaks and move quite actively about in search of fresh food.

When young, the males and females cannot be distinguished one from the other, but in a few weeks the males cease growing and change into the pupa state. The male scale is lighter than the growing females, and becomes longer and narrow. As the transformation progresses, two anal stylets project from the posterior end, and soon after the end is slightly raised and the male comes forth, leaving behind on the leaf the whitish larval scale. These are found scattered about among the females, on both upper

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and under sides of the leaf. The male louse is very different from the female. During the pupa state he has acquired wings for the new sphere into which he is about to enter, and, although he still retains the legs and antennæ, the beak and mouth organs are wanting, since, in the short existence granted him, there will be no need of food. The males generally appear the latter part of the month of July, and continue some two weeks. They are very active, flying about the leaves with great rapidity. At this time, impregnation takes place, the males dying shortly after, while the females remain on the leaves and continue to develop.

FIG. 9. MAPLE MALE LOUSE.

Comparatively few of the male lice have as yet been discovered, and it is always with pleasure that they are found by the investigator. Their existence is but for a short time, since not longer than three weeks in the year are they found; the probable life of each individual being not over a few days; and while the females are destined to remain upon the tree during their entire existence, the males acquire wings and fly about. That the males are necessary for the propagation of the species is doubted by some authors. I made a careful estimate of the number of larval scales on several leaves of the trees recently infested, and on those which had suffered a longer time, and found the average number was greater upon a much diseased tree than upon a healthy and vigorous one which had not felt the effects of the insects. It often happens that maple trees will suddenly revive and outgrow the injury done them by the bark lice, to an extent, even where no attempt has been made to exterminate them. Whether this is due to the greater number of young lice proving to be males, or the effects of parasites and disease, I am unable to state.

We find, then, that the *Pulvinaria innumerabalis* is single

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brooded, the females living a few weeks over one year, the eggs deposited the latter part of May, and the young lice appearing three weeks and a half after. That they settle down at once upon the leaves of the tree and remain until autumn, when they return to the under side of the leaves, remaining in this assumed position the remainder of their lives. The males appear in eight weeks after the young have hatched, and the females are then fully developed; in two or three weeks the males disappear entirely, while the females remain dormant on the limbs six months and a half of the entire year. It is well known that the varied temperature has great effect upon the length of time the insects remain in their several stages of growth.

The manner in which this insect is conveyed from place to place is undoubtedly through the transportation of the trees, the scales of the female adhering to the limbs when transplanted. The insects spread from tree to tree by the aid of the wind when in the egg state, the waxy mass becoming detached from the tree in very stormy weather, and, being light, is easily blown about. Many flies, wasps and bees are attracted to the trees by the sweet substance in the waxy mass, and the young lice, when crawling about, before settling down upon the leaves, will become attached to the legs of these insects and thus conveyed to other trees.

Nature has made violent efforts to assist in destroying the *Pulvinaria innumerabalis*, and one of the most successful ways of combatting with this destructive insect is by cultivating and protecting the natural enemies. To the lady birds we are the most indebted for services in this direction, since, unlike many kinds of insects, they continue their work of destruction throughout their entire active life, the larva and imago subsisting upon the same kind of food. Three kinds of lady birds are found more or less numerous upon the infested trees during the summer months. The *Hyperaspis signata* Olivier is, perhaps, the most abundant and valuable of the whole. The lady bird larva is small, light colored, and covered with a peculiar white, downy substance. They are found inside the waxy mass devouring the eggs before they are hatched. In this way many eggs are pre-

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FIG. 10. LADY BIRD *bivulnerus*.

vented from hatching, and since they occur in considerable numbers, we owe much to them for the valuable assistance rendered. The outside of the mass appears entire, but by carefully separating it, the larva can be observed, by the aid of a common lens, in the act of devouring the contents of the egg. Only one larva is found in each mass. The larva changes to the pupa state upon the tree, from which appears a small black beetle, with one bright red spot on each elytra.

The next in importance is the *Chilocorus bivalverus* Muls., and although not occurring in as great numbers as the *signata*, yet they are exceedingly beneficial, since they attack the young larvæ. The larvæ are recognized from the *Hyperaspis signata* by the larger size and being covered with a large number of black spines, and are not found inside the egg mass. They are ravenous creatures, and since it takes a number of lice to appease their appetite they work much good in the course of their existence. The imago subsists upon the young lice, and is similar in appearance to the *signata* although much larger. It has, however, the same black appearance, and red spots on the elytra. The larvæ cluster together when entering the pupa state, from which the perfect beetle emerges, and this is effected through a split which opens upon the back.

The fifteen spotted lady-bird, *Mysia* 15 *punctata*, Olivier, is also destructive to the bark lice and is larger than the two before mentioned, but does not occur in the same numbers. The larvæ are furnished with six rows of stout spinulated spines along the body, the upper surface of which is black, while beneath it is pale, and is about half an inch in length. The beetle is black on the head and pro-thorax, having seven black spots on each brownish-red elytra, and a black spot on the scutellum; it is seven-twentieths of an inch long. Every effort should be made to protect these lady-birds in all their stages, and when applying artificial remedies, care should be taken that it does not destroy the friends as well as the foes.

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The female maple louse have one true parasite, *Coccophagus Lecanii*, Smith, which is double-brooded, and lives in the body of the female. The insect is a small four-winged insect, having a black body and four membraneous wings. When the imago is about to emerge, the dorsal part of the *innumerabalis* becomes very black and presents a rounder appearance; later the parasite makes a small circular opening from which it takes flight. The first brood occurs in early spring, the second in August.

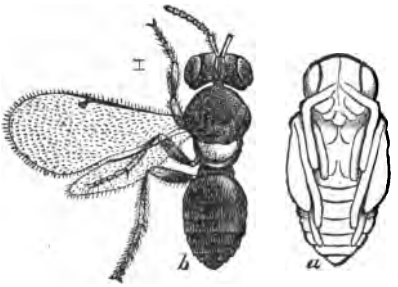

FIG. 11. CHALCIS' PARASITE.
The short lines denote natural size.

REMEDIES.— With the life habits laid bare before us, we can the more easily devise some method by which this insect may be exterminated. The fact that the young lice settle upon the under side of the leaf and limb, renders the use of fire extinguishers charged with liquid solutions, possible and to good effect. I made two kinds of experiments, both of which proved of benefit and cheap. When the lice are first hatched they are very small and delicate. A wash containing an alkaline solution applied at this time is sufficient to destroy them. I found that by attaching a wire bag to a common sprinkling hose, filling the bag with soft soap and turning on the water, a soap-suds was formed which would at once kill the insects. The scarcity of the water system in small cities renders this plan impracticable, however, and experiments led to a plan, easily attained by all, and which has proved successful the two seasons past. The plan recommended is as follows: Charge a fire-extinguisher, in the usual manner, with bicarbonate of soda and sulphuric acid; add to the water one spoonful of crude carbolic acid to every eight gallons of water. Apply this to the tree; the force from the extinguisher will convey the fluid to all parts of the tree alike; the disposition of the insects to settle upon the lower surface of the leaf and limb serve to further this plan. Two applications should be

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made upon the same tree; the first, three weeks after first deposition of eggs, and the second, four weeks from the first application. If the work is delayed, the insects become strong and the strength of the solution must be increased, which would be liable to injure the tree itself. The actual cost is not exceeding twenty cents an application, which is trifling compared to the cost of replacing the tree. That the experiment may prove successful it is necessary to make the work thorough throughout a locality, since in a short time they will return from other infested trees.

Very fine drawings of these insects were exhibited, and served greatly to add to the interest of the paper and to give a clear idea of the peculiar characteristics of each one as described.

An interesting discussion followed the reading of the paper, but, unfortunately, the peltings of a severe storm on the roof of the hall seriously interfered with the remarks being generally heard.

President Smith stated that the cabbage worm made its appearance in his garden eight or ten years ago; at first they threatened to destroy his entire crop, but soon after the worms came, a multitude of little birds took possession of that part of the garden and made such thorough work in their destruction as nearly to exterminate them, so that they have given him but little trouble. But there was another and far more destructive pest that was doing great damage to his cabbages, and he would be willing to pay well to be informed how to destroy them. All the remedies he had tried proved of but little effect. He was about discouraged in regard to that branch of gardening, and did not know but that he should be compelled to give up raising cabbages. Some years they appear to be much worse than others. In some seasons they have taken every plant clean, through a large field. This year he had lost about 500 plants, while his sons had lost from 5,000 to 8,000. On examining the plants affected he found the roots covered with a light colored maggot, which seem to eat off the soft part of the stem and the small roots under the ground, and sometimes cut off the large stalk. For some time he was at a loss to account where they came from, but on keeping a close watch he found that the eggs were laid by a small fly, either on the stalk near the ground, or on the ground, even, near the

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roots; in a few days these eggs hatch out, and the maggot works its way down the stalk under the ground, and soon destroys the plant. He judged that they were the same pest that worked in the turnip and radish, but was utterly at a loss how to meet them.

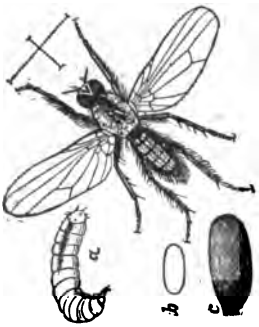

FIG. 12. RADISH FLY.
a. Maggot; *b.* Egg, natural size; *c.* Chrysalis.

Mr. Wood, of Baraboo, had experienced the same trouble. In order to learn their origin, he had collected the larvæ when nearly mature and kept them confined until they were transformed into a fly. This fly was somewhat smaller than our house-flies, but resembled them in other respects. They were of a rather lighter shade of brown, and their wings were longer in proportion to their size. He had brought along a specimen of these flies hatched out a few days since. In order to secure a crop of early cabbage he had sowed the seed in a cold frame and kept the plants there quite late in the season. But on setting them out, he found that many of the plants were infested with these maggots, but he cleaned them off and dipped the roots in liquid cow-manure and most of them did well.

The remarks that followed brought out but little practical experience in the way of remedy; that they were the old pest, the Radish fly, described many years ago by Fitch and Packard; that they were much more destructive in and near grounds where radishes had been cultivated, and that the means most likely to destroy them was to drench the soil near the stems affected with hot water, lime water, or weak brine; it might kill the plant too, but it would only prevent its being killed by the worm. To pull and effectually destroy all the cabbage and radish plants as soon as they were seen to be injured would also greatly lessen the number of perfect insects, and consequently lessen the destruction they occasion.

Miss Smith, in response to inquiries, said that the rose slug which was such an enemy to the queen of flowers, came from eggs laid by a small, light colored fly; these eggs are laid on the under side of the leaf, which soon hatch out and commence to eat the

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leaf; in a short time the under side of the leaves are specked with white, and look as though they had been dusted with flour. The worms develop rapidly, and when mature descend to the ground and burrow into the earth, pass the chrysalis state, and soon come forth again as a fly. Dusting the bush with sulphur will destroy them.

A new enemy to the housekeeper had recently appeared in some places in the west, and was doing great injury to carpets and other woolen goods. It was more destructive than the common well known moth. The larvæ are found early in July, around the edges of the carpets. In August, it appears in the beetle state, oval or elliptical in shape, and about an eighth of an inch in length. Benzine and kerosene are the most effectual remedies known.

Mr. Plumb stated that this subject of our insect foes was a very important one, and was becoming more and more so. The Coddling Moth had spread all over the state, and infested every orchard. The Tent caterpillars seem to be increasing in numbers, and like the canker worm, were yearly carrying their work of destruction into new fields. He thought the best remedy we had for all these pests was arsenic; it was both cheap and effectual; and also as easy of application as anything else.

Miss Smith opposed the use of poisons, as they were alike destructive to our friends and our foes.

A vote of thanks was tendered Miss Smith for her excellent paper, and on motion she was also elected an honorary member of the society.

THE FARM GARDEN, AND FLORICULTURE.

Mr. Jonathan Periam, being invited to address the society upon the Farm Garden and Floriculture, said he was glad to have the opportunity, although what he would have to say would be perhaps disconnected, and more in the nature of hints than a regular address. He was pleased to see so many ladies in attendance, for on them must devolve in a great measure the supervision of the work in the vegetable and flower garden. In fact, the care must

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almost wholly devolve on the sex, since it seemed difficult to make the average farmer believe that it was not time and money thrown away that was put in a vegetable garden. Nothing could be more erroneous. A well kept garden would supply fully half the living of a family; and the labor of a man for about sixty full days would raise not only all the vegetables, but also take care of an ample supply of small fruits. He advocated a liberal outlay for cold frames. Every farmer should have ten sash, three feet four inches wide by six feet long. All that was necesssary, he said, was to build a rough frame of common boards, ten inches high in front, and sixteen inches at the back. Under the edge of each sash, nail a three inch strip, one and a quarter inch thick, for the sash to slide on, so the tops of the strips may come flush with the tops of the front and back. Prepare the soil thoroughly, with one quarter of thoroughly rotted manure, and add one quarter of sand on leaf mold, if the soil is heavy or mucky.

In such a frame, put up about the first of April, in the latitude of Green Bay, all the lettuce and radish may be raised the family can consume, besides early tomatoes, cabbage, cauliflower, celery, pepper plants and egg plants, which the family will want to set out. A single sash will suffice as a seed bed. Sow the rest with lettuce and radish, which will make radish and young lettuce by the time the tender plants are ready to move. Then make another frame, transplant four inches apart in it, using the space not wanted for the tender plants, for the lettuce, planted five inches apart. The glass may be placed over the new bed, and the lettuce and radish in the first bed may be covered with boards in cold nights. In answer to a question, he said: Do not depend on rain; water when wanted, from a can. When you water, do so liberally, and then let the bed get somewhat dry before you water again. One of the great mistakes was in keeping the ground saturated from continual waterings.

Do not forget your flowers. Plant mignonette in pots, also dwarf nasturtions; plant pansies, asters, candytuft, allyssium, balsams, verbenas, petunias, pinks, anterrhirums, portulaccas and other things you like, in lines four inches apart, and pretty thick in the row, and transplant when danger of frost is over. It costs

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less to take care of plants in a frame, than to weed out of doors, and you may forward the season of bloom fully three weeks.

In answer to a question as to how he arranged a vegetable garden, he answered in rows as long as possible, and of a width so a horse could work between the rows. The land is not of so much value as hand labor. A horse will work easily in a two feet row, with an implement that simply scarifies the soil, and does not throw earth to the side. He uses a wheel hoe while the plants are young, worked by hand. Many persons could not succeed with these implements, because they supposed they must be run as a horse would a cultivator, moving steadily along. The machine should be thrust forward, and then drawn back, as the workman progresses along the row. A man would learn in a half hour to cut within half an inch, or even nearer, a straight row of plants without injuring them, and will do more and better work than three men with hand hoes.

If you do not wish a row of any particular variety, clear across the field, piece out with something else. Thus, lettuce, radish, spinach, cress, etc., may be placed along one after the other. Early, medium early and late peas may follow each other in the same row; so many early and late varieties of beans, beets, onions, carrots, salsify, parsnips, etc., may also be pieced into rows; and when they get large enough they may be cultivated with an ordinary fine tooth cultivator.

In answer to the question, what is a cold frame, Mr. Periam said, it was simply a frame as described, covered with glass. A hot bed is made by laying down from sixteen to twenty inches in thickness of heating horse manure, turned often enough to get the strong heat out of it. Then lay it evenly in the bottom, shaking out all lumps, and pressing pretty solid, either by beating it with the back of the fork or tramping lightly; on this, six to eight inches of fine compost earth is placed, and it is ready for frame, the glass, and planting. He preferred the hot bed, but it requires nicer care than a cold frame. A hot bed may be put up about the first of March, and raise two crops of lettuce by having the plants started in the house ready to prick out. When the second crop of lettuce is planted in the bed, put a hill of cucum-

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bers in the middle of each sash, and they will come forward and fruit long before you can get them outside.

One difficulty with beginners is that they fail to get seeds to germinate. The fineness of tilth is important; fine seeds, as celery, portulacca and petunia should be simply patted down and a very light covering, not more than an eighth of an inch of sand, sifted over them. Then give plenty of heat and moisture, until they come up. Straight lines, carefully staked are essential, so that delicate plants may be seen as soon as they come up, for ease in weeding. A cold frame is fairly adapted to cuttings after the middle of April. Use six inches of clean, sharp sand; set the cuttings quite thickly together and give plenty of heat, and some shade in the middle of the day, and keep the sand quite moist (not wet), by frequent waterings. He transplants small plants with a dibble, a pointed stick not larger than his little finger, and sharpened to a point. It is a good way to have quite small plants in water, take out a plant, drop the roots into the hole made, thrust in the dibble diagonally and partly under the plant, press up to the plant firmly so the earth comes fully in contact with the roots, and water with a fine rose watering pot. It costs less to raise any plant in this way, that may be transplanted, than to sow in the open ground and weed them, especially when we remember how much earlier we can get them.

In relation to the cultivation of flowers, Mr. Periam preferred beds cut in the grass, and made rich with compost manure. Preferred to have only flowers of one variety in a bed. At least only flowers of the same color should be used, unless a carpet bed is intended. In this case, the colors must be arranged so they will harmonize. In foliage beds, the dark colored plants should be placed in the center, and the lighter colors at the outside.

The speaker dwelt strongly upon the humanizing effects of floriculture. The savage, like a wild beast, eats only the flesh of wild animals. The barbarian subsists upon his flocks and herds, and on a scanty supply of grain. The civilized man is an omnivorous eater. The truly enlightened are those who draw from all parts of the world the means of their subsistence, who ornament their homes with beautiful flowers, and take pleasure in their

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cultivation. Their gardens are gay in summer, and their windows in winter, with these beautiful objects which God has given us for our pleasure. Agriculture is the basis of national wealth the world over. The fine art of agriculture is horticulture, and the poetry of horticulture is floriculture. All that our rural population want, in order to make our homes attractive with these beautiful objects, is a little study and observation as to the means to be employed for their successful cultivation. There is no way in which a woman may better display her taste than in the ornamentation of her windows in winter. It need not cost much if one is content to wait until small plants can grow, and some observation as to the soil and watering necessary. As a rule, we fail in too much watering. That is in dosing them every day with ice cold water. It does not hurt plants to get a little dry sometimes. Small pots dry out fast and must have water daily; sometimes twice a day. Large pots require only water when the top of the pots show that they are dry. Hanging baskets require more water than pots. For a hanging basket, there is almost no room where a Maurandia will not do well, if it can have plenty of light. Oxalis makes an elegant object, either the pink, the white or the yellow variety. For the centers of large baskets use euonymas, Crassula epiphyllum, a dwarf begonia, or a dwarf geranium. For trailers, vinca, othonna, mesembryanthemum, thullenpachea, smilax, trailing lobelia, Kenilworth ivy, Tradescantia, sweet alyssum, or anything that suits your fancy. As a running vine a Hoya does well, with care in training and watering. A Catatonian fessamine is most elegant. Don't keep your plants too hot. Almost any plant will do well at sixty-five degrees, though the temperature is better at seventy degrees at night. It should not go below fifty degrees, since pots chill most easily; and if there is a strong draft through the cracks of the window in winter it is fatal to tender plants where it strikes. Therefore let me advise you to provide double sash, at least for your plant windows. They cost but little, are easily put up and taken down, and will fully pay their cost in added comfort to the family. With such at hand, it is a profitable pleasure the time that is spent in the tending and artistic grouping of beautiful

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plants and flowers, with which God has so lavishly adorned the earth in summer.

PACKING AND MARKETING FRUIT was briefly discussed. President Smith thought that too little attention was paid to the manner in which the fruit was placed on the market. The appearance of the package, as well as the condition and appearance of the fruit, had a great influence not only on the price it would command, but also in the readiness of the sale. The neat, attractive packages of good looking fruit were usually the first to be sold, and at good prices. He had been surprised to see what a difference this makes, even in fruit that was really, in quality, no better, if as good, as some that did not appear as well. If the box or package is jammed or rough looking, or the measure is short, or the fruit does not appear fresh, of even size or uniform quality, it is much slower of sale, especially in a full market, and often hangs on to the last, and has to be sold at low prices, if not at a sacrifice. It is astonishing to hear of the prices that are sometimes paid for fruit of extra quality; this is in part due to a demand peculiar to some special market, but is also largely owing to special care in the selection and packing.

Mr. Greenman stated that he had seen the sale of many baskets of fair fruit greatly injured because there were a few bunches, or a small quantity of inferior fruit mixed with them; the poor fruit increased the quantity sent to market, but it lessened the receipts. He had no doubt that if one-quarter of the fruit usually sent to market was thrown away, and only the best shipped, the returns would be much greater and more satisfactory than they now are.

Mr. Plumb had seen boxes of strawberries in the Milwaukee market that brought double the price of common berries, simply because they had been sorted. The size was not remarkable, but they were of good, fair size; it was uniformity in size and quality that gave them this extra value. Packages of fruit are often seen, that show well on top, but are of an inferior quality at the bottom. This is a mistake; it should be alike all through, or if any difference, it should grow better as you get further down; customers will be sure to examine for themselves, and will be much better satisfied to find the poorest on top and that they improve as they go

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down. He had tried sorting the fruit, and had concluded that it did not pay. Would not put in any very inferior fruit, but thought it was better to sell only good, fair fruit; make good measure and have it alike all the way through; if there was any difference at all, he would rather put the best at the bottom and the poorest in sight.

Mr. Kellogg was of the opinion that the best way to market strawberries was in drawers, holding sixteen quarts each; customers then have a better chance to see the quality of the fruit and could also see it measured. He thought sorting would pay, if it could be done properly, but it is impossible to get pickers to do it as it should be done. He would recommend as the best plan, to raise none but good ones.

Society adjourned to meet at 7 o'clock P. M., at the Brown County Fair and Festival, held in the Armory Hall.

FAIR AND FESTIVAL. — The exhibition of fruits and flowers of the season, held in the evening, under the management of the Brown County Horticultural Society, was very large and fine. The attendance was large, and all present appeared to heartily enjoy the occasion. The provision for social entertainment and bodily refreshment were more than ample, they were all that could be desired, but the cordiality and kind interest manifested by the citizens of Green Bay, added still more to the interest and the pleasure of the hour.

The exhibition of strawberries was both large in quantity and variety, and of very fine quality. The main exhibitors were G. J. Kellogg, J. M. Smith, J. C. Plumb, Stickney & Baumbach, and J. Spence.

There was a collection of fine, early, garden vegetables on exhibition, most of them from the garden of President Smith.

The display of cut flowers, house and greenhouse plants, was large and very good. Their number, variety, and the skill shown in grouping and arrangement, displayed the great interest taken by the citizens of Green Bay in floriculture, and their good taste and ability to make such a public exhibition useful and attractive.

The collection of mosses, ferns and wild flowers was a pleasing addition to the general display, and one that was much admired.

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A list of the premiums awarded will be found at the close of the report of this meeting.

EXCURSION. — To add still more to the interest of the occasion, and the pleasure of their guests, the citizens of Green Bay had planned a steamboat excursion on the bay. Two boats were in readiness at 9 A. M. of the 27th, and the society, with many of the citizens of the city, went aboard and highly enjoyed a three hours' sail up and down the bay.

Soon after leaving the pier, a business meeting of the state society was called on one of the boats.

President Smith spoke of his action, on the authority conferred by the state society, to use $100, if need be, to promote the success of the June meeting. He stated that he had offered to pay $50 of this amount to their local society, on condition that they would raise a like amount, all to be offered in premiums on fruits and flowers in an exhibition held in connection with the meeting.

The action of the president was endorsed by the society.

EXHIBITION OF FRUIT AT POMOLOGICAL MEETING. — The desirableness of making an exhibition of Wisconsin fruit at the meeting of the American Pomological Society, to be held in Rochester, N. Y., in September, was discussed, and an appropriation of $50 was made for this purpose.

HORTICULTURAL EXHIBITION AT THE STATE FAIR. — The following preamble and resolution was then introduced:

WHEREAS, The State Agricultural Society has stricken out of the premium list for the horticultural department, at the coming state fair, the usual heading stating that the department was under the management of the State Horticultural Society; and has left out the rules for the management of said department, adopted by the State Horticultural Society at its last annual meeting, and there is nothing in the premium list to show that the State Horticultural Society has any interest, responsibility in, or control of the department; therefore

***Resolved*, That it is not advisable for the State Horticultural Society to take part, as a society, in said exhibition, and that it is not bound to pay any part of the premiums offered in the horticultural department.**

The secretary, being called upon to state whether the parts omitted in the list were in the copy prepared for publication, stated that they were; that he did not see the proof of the list before it

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was printed, as he had requested the privilege of doing; that he did not know who was responsible for the omissions, but supposed it was the printers, for the secretary of the State Agricultural Society, in reply to inquiries as to how the mistakes occurred, stated "that he did not know," and "that the reason why he had not sent the proofs, as requested, was because the Gazette Company were behind time in the printing of the list, as they had agreed with those advertising in it to have it out by a certain date, and therefore they did not send the proof of the last part to him, but read it themselves and printed it."

This being the case, the secretary would not like to have the resolution pass in its present form, as it stated expressly that the changes were made intentionally, when they may have been the result of a mistake or oversight. There was nothing now to show that the society had any connection with the exhibition, and he did not believe it ought to pay any part of the premiums, but that there were other and better reasons for not doing so, that he would like to have expressed in the resolutions, and to have them changed, so as not directly to censure what may have been simply a mistake.

The resolution was lost.

On motion, a committee was appointed to present resolutions on the subject, in accordance with the views expressed in the discussion.

The president appointed on this committee, Case, Plumb and Anderson, who reported the following resolutions; which were adopted.

WHEREAS, We deem it due to the horticultural interests of the state, and the obligations the society assumed in its act of reorganization, to cooperate with county and local horticultural societies, in holding meetings for discussion on practical horticultural subjects, and in the organization of kindred organizations in different parts of the state, that this society should give special prominence to this work; and

WHEREAS, The appropriation placed at our disposal was granted professedly for this purpose, and is not sufficient in amount to enable us to do this work in a satisfactory manner and devote any part thereof to the payment of premiums at the state fair; and

WHEREAS, There is nothing in the premium list for the coming fair to show that this society is in any way responsible for, or has any interest in such exhibition; therefore

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Resolved, That we hereby announce to our members that we have no official connection with the next annual exhibition of the State Agricultural Society; and

Resolved, That we urge our members individually to join heartily in promoting the success of the horticultural department of the next exhibition of the State Agricultural Society.

ENTOMOLOGICAL CABINET. — The secretary stated that Dr. Hoy had renewed his kind offer to donate to the society a collection of injurious and beneficial insects as soon as proper means should be made for their preservation and exhibition. To place such a collection on exhibition so that the public could examine it freely, would require something different from the usual form for such purpose, especially as the circumstances would not permit the collection to have that personal supervision at all times that most entomological cabinets have.

It was deemed important that such measures should be taken as would secure to the society and the public the benefits that would result from such a collection, and the following resolution was offered and unanimously carried:

WHEREAS, Dr. P. R. Hoy, who was elected society entomologist at our last annual meeting, has kindly tendered us a collection of specimens of the beneficial and injurious insects common to our state, and especially of interest to the horticulturist,

Resolved, That our executive committee be instructed to inquire as to the means necessary for the exhibition and preservation of such a collection, and to provide for its reception in any way they may deem expedient.

The executive committee subsequently authorized the secretary to make inquiries in relation to the matter, and to report to them the form of cabinet best adapted for this purpose and the probable cost.

SOCIAL PICNIC DINNER. — At about the noon hour the steamers discharged their burden of delighted voyagers near the residence of our worthy president. The eager crowd were soon scattered all over his garden, and, we fear, committed all manner of depredations; testing the quality of the strawberries to the limit of personal capacity; investigating methods, and prying into the secrets of the business and the causes of success. The call for dinner soon cut short this pleasant employment, and all

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were gathered around the tables, set under the pines in the door-yard of our host. The abundance and variety of both substantial food and luxuries, with the hearty good cheer and friendly feeling of those present, increased the enjoyment, the relish of the occasion, and clearly set forth one of the causes which had contributed so much to the prosperity of the local society. About two hundred joined in this substantial and social feast.

When the noon hour was passed, the society came to order, and the following paper, by J. S. Stickney, was read:

ROSES FOR THE MILLION.

An enthusiastic cranberry grower often encourages us with the comforting statement that we surely can raise abundant crops if we will "produce the necessary conditions." It is with real pleasure that I bring to you to-day the same assurance as applied to roses. In the matter of cranberries, our perfect faith has sustained us through five years of effort, wherein the abundant crop has not appeared, and we suppose, of course, the "conditions" have not been produced. In the matter of roses, we hope to inspire you with a faith that shall lead to earnest and persistent efforts worthy of speedy and large reward.

To aid in this, let us consider some of the necessary conditions. First and greatest is the love for and desire to have good roses; this interest must be sufficiently deep and strong to lead us to spend thought, study, labor, and some money upon them. Presuming that you have this, I will not trouble you with any very scientific or exacting conditions, but simply consider how we may have just common roses in abundance, and in a very common sense way, just as we have good, common fruits and vegetables. Skillful growers seek a strong, loamy soil, perfectly drained, deeply worked and heavily manured; yet, for our common roses, the "strong loams" may, and often must, be varied by such as we chance to have in the place most convenient to plant, provided only that it have thorough drainage, and if very light and sandy, more or less of clayey loam be added. The deep working may mean as deep as can be turned with the plow, say twelve to fifteen inches; and the heavy manuring, such a degree of fertility as will

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produce fine garden vegetables. With such facilities, properly utilized, the beauty and fragrance of choice roses may greet you everywhere.

What shall we plant, is the first question asked. All the leading catalogues name and describe from two hundred to three hundred varieties. Such lists ought to fully meet our wants, but, really, they perplex more than they help us, and we still ask, what shall we plant? Let me name a brief list that, in our nursery practice, we have found to possess the good qualities of healthy, vigorous growth, easy propagation, free blooming, and hardiness: Madam Plantier (pure white), George 4th, Russelliana, Princess Adelaide, Luxembourg (moss), Centifolia, Damask, Queen of the Prairies, Baltimore Belle, Elegans, Harrison's Yellow. These, with reasonable treatment, will always do well, and during their season will nobly reward those who care for them; but by the middle of July their year's work is ended, and our roses for the balance of the season must come from other varieties. The Hybrid Perpetuals give us these, and here we can hardly go amiss as to choice of kinds, giving preference to those of strong, vigorous habit. Plants of these, grown on their own roots, are sometimes feeble, and fail to produce such growth and bloom as we desire. Much vigor and strength are gained by budding on Manetti stocks. These stocks have the one fault of throwing up suckers or off-shoots which, if not promptly removed, will soon outgrow or overcome the budded part. To omit the slight care and labor necessary to remove these sprouts would not indicate a lively interest in our work. We get stronger and more enduring plants on Manetti roots, and always give them the preference. In ordering plants from the nurseries, it is well to specify whether on their own roots or otherwise.

Here ends the varieties that are usually termed hardy, or, in other words, that with proper protection may be carried safely through the winter where they stand. Before leaving them, let us consider their general management somewhat more in detail. For soil in which to plant, we fully understand that while very common soil will do, or will be better than none, yet it will richly pay to make it just as rich and as deep as our time and material

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will permit. Enriching material must *not* be fresh stable manure, but should be old, thoroughly rotted manure, composted with sods, leaf mold or muck. A compost heap, the year's accumulation of all these materials, frequently turned and kept moist with the kitchen waste, will be an invaluable aid, not only to the roses, but to many other choice things. Having this at hand, we can encourage any plant that is flagging, by a top dressing, dug slightly into the surface, and thus keep all to their very best work.

If practicable, prepare your ground in autumn, leaving the surface as rough as possible for the action of the winter's frosts. Plant only in spring, and let it be *early* spring, or as soon as the ground is dry and warm enough to favor growth. Always plant the best you can get. If only a slip or an off-shoot from a neighbor's bush; plant it hopefully and *well*, and see what grand results you can work out from very small beginnings; you will thereby gain, not only beautiful flowers, but a valuable life lesson which will be equally applicable to far greater things. Perhaps many varieties are within your reach, that for want of care have come to be considered of very little account, hardly worth saving; if so, gather them up, and see how joyously they will respond to kind and generous treatment. If plants are to be purchased, buy those that are strong and well established, and not the very little fellows that are advertised to come to you by mail at a few cents each. These are well enough for the skillful cultivator, but, as a rule, they prove a disappointment to the general planter; better allow the nurseryman to *finish* them before sending to you.

Having your plants in hand, let your planting be done promptly and thoroughly; remember that *roots cannot bear exposure to sun or air;* keep them covered with something that will retain their moisture. Moist earth is the best covering. A half hour's exposure, though it may not kill, will greatly enfeeble them. Cut away bruised or injured parts of roots; cut back the tops severely, removing half to two-thirds of all the wood, according to strength of root. Plant perhaps two inches deeper than they were planted before, or, in case of budded plants, let the point of union be one to two inches below the surface; spread the roots in a natural position and press the earth firmly about

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them. When all is done, mulch the surface with something that will retain moisture. If very dry, or the plants are a little shrunk by exposure, the whole plant may, for a few days, be half shaded by straw, loosely tied about it; this should be thoroughly moistened every evening, and only kept on until buds begin to push.

Having your plants established, they will, throughout the season, respond promptly to such generous care as you may bestow upon them. Late in autumn, put a heavy mulching of strawey manure, sawdust, or other similar material, about your plants; carefully bend the wood nearly or quite to the ground, and cover lightly; or, where this would be objectionable, draw carefully to a firm stake, and encase all neatly with a thick coat of straw. Thus secured, there will be but little suffering from winter's frosts. Do not be in any haste to remove this protection in spring; let it remain until steady warm weather is well assured, then remove all. Fork in a dressing of compost about the roots; prune the plants as needed — the climbers and mosses sparingly, the perpetuals severely — and look hopefully for the reward of your year's efforts. This fine bloom will have a double value for you, first, because of their beauty and fragrance; second, because they are so largely the work of your own hands.

We will now consider the Bourbon, Noisette, China and Tea roses. In these we have a world of delicate beauty and fragrance, not attainable with the others, running late into the autumn, and that may be taken up again in very early spring, but requiring more attentive and skillful treatment than the hardier kinds. These are best suited for pot or green house culture. They may be grown to advantage in the open ground, during the summer, and being mostly perpetual bloomers, give us a profusion of flowers in autumn, when most needed. A few of them can be wintered out by thorough and careful protection, but it is safer to remove all to the cellar or cold frame. To do this, lift them carefully, with all the roots possible, and, if for replanting again in the spring, pack them in the cellar or pit with the roots deeply covered with earth, just moist enough to keep the plants from drying. If wanted for early blooming in the house, they should

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be planted in pots of suitable size, and the pots plunged in earth, in a cool cellar. The object in either case is to hold them as nearly dormant as possible, and the danger is that they will get so much of warmth and moisture as to cause them to commence growth before they can be planted out, or be put in position to have the needed light and sun.

In house culture, the best results may be attained by taking fresh young plants and growing them one summer in pots, commencing with four or six inch pots, and shifting once or twice to a size larger. These pots may be plunged in the ground in a sunny exposure, mulching the surface over the pots, and watering when necessary. In autumn, prune them back, and pack away in the cellar until February or March, then water sparingly, and bring gradually to light and warmth. Such plants may be brought forward in succession, and will thus give you roses nearly or quite to the early bloom in open ground.

Having good roses, many will desire to increase their number, or to raise young plants to take the place of those that may be growing unthrifty. All roses increase by off-shoots from their collar or roots, but with many this is a very slow process, and will hardly answer our purpose. All may be grown from cuttings, but with most, this requires some glass, some bottom heat, and considerable skill and practice to rightly use these agencies. In our nursery practice, we mostly increase our perpetuals by budding; our mosses by off-shoots, and all others by layers; sometimes the layers of some varieties must remain two seasons before removing from the parent plant. All layers and all off-shoots are planted and grown one season in nursery rows, before offering for sale; in this way all become thrifty and vigorous, and of a fair size.

It is not within the limits of this paper to fully detail the practical means of budding, layering, or making cuttings; skill and success therein can only be attained by practice, guided by practical illustrations, or by a careful study of such books as treat these subjects fully and completely. Among such books are "Parsons on the Rose," and "Parkman's Book of Roses." Valuable ideas on propagation and culture may also be found in

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"Barry's Fruit Garden," and "Henderson's Practical Floriculture."

The enthusiastic cultivator will doubtless feel disappointed that this paper contains only brief hints and suggestions, all of which he perhaps knew before; but he must remember that it was not written for him. He is already fully instructed in his work, and has for his guides the books named, and many others which will lead him onward and upward until he and his work shall be leading and worthy examples to those coming after. The aim of this writing is to place a few good roses in the hands of everybody who cares for them, and the hope is that here and there a few will imbibe enough of interest and enthusiasm to lead them on, through the aid of books and practical work, to become skillful and successful cultivators. I most earnestly wish the desired end could be reached through easier and less complicated ways; yet were roses produced as easily as clover, and used as common food for cattle, their perfume would seem less sweet, their beauty less charming, and their real value lost.

The next paper was read by Mrs. Huntley.

THE FARMER'S DOORYARD.

MRS. D. HUNTLEY, APPLETON.

In the external appearance of any rural home, there is nothing so attractive as a dooryard where fresh green grass, growing trees and flowers make bright the entrance way to the dwelling. It is the index of the home; the outward expression of the taste and refinement of its inmates. It has a language that is unmistakable, whether seen in that saddest time of all the year, when brilliant autumn flowers, unfolding the accumulated beauties of the summer, have just been touched by the destroying frost, or later, when covered by the snows of winter, each bed and mound reminds us of departed loveliness, and trees and shrubs stand up like sentinels to guard our sleeping treasures; or yet when spring, with all her promises of coming beauty, makes glad the earth; or now, in this sweet month when roses bloom, and glad hearts sing in joyous tune,

"The sun is king, God speed the June."

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There is something beautiful beyond expression, in the idea of making a home, of selecting a little spot in this wide world which we shall consecrate to all the dearest interests of life; where love, which transforms the plain and prosy into fascinating pleasure, shall reign supreme; where we shall gather around us the beautiful things of earth, and make it that sweet home of which we sing. We talk of the ideal, and we each cherish in imagination something which we hope sometime or somewhere to accomplish; but how few set the real over against this bright ideal, and begin at once to create the counterpart of that which fancy has portrayed in such glowing colors.

Much has been written upon landscape gardening, wherein we are told of the effective grouping of deciduous and evergreen trees, with foliage of striking contrast and rarest beauty, of curious dwarf trees from Oriental lands, and finest flowering shrubs, and beds of foliage plants, and carpet beds of variegated colors, lovely in design and fanciful in shape. With these elaborate directions the man of wealth can make his home an earthly paradise. But there are thousands of homes, all over our country, that can never be adorned like this; homes where toiling parents dwell, and children who in all their toiling years will never so much as see the wondrous beauties of a landscape garden; homes where men and women who love the beautiful more intensely than those surrounded by the splendors of wealth; fathers and mothers who would gladly make their homes attractive, who still cherish the faded picture of the delightful home they once hoped to possess, but whose whole time and means must be given to imperative labor. The wants of a growing family, food, clothing, a house, barns, stock, accumulating debts and increasing taxes, these are enough for any one, or any two pairs of hands; and with a high appreciation of what a rural home should be, the inability to gain the ideal, and the unwillingness to descend to small beginnings, the time to beautify the home is long delayed or never found. Here is the one great error.

There are some things which reward us in the doing, some which grow into things of beauty and become helps and incentives in our daily work. A growing tree or blooming plant is a

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continual pleasure while we devote time and labor to important duties, or wait for that success which we expect in future years. We have in memory a little home which sprang up just back of the one business street of a growing western city. The house was one of those board shanties so often seen in the west, with nothing to distinguish it from many of the same kind except the one little window, with that telling bit of drapery, a white curtain. The little dooryard was enclosed with a rustic fence, made of wide rough pickets driven into the ground a few inches apart, and woven together at the top with willows. Within, this little enclosure was filled with brightest flowers. Gay poppies and pinks, and golden marigolds and bright nasturtions shone among the cabbages and lettuce, scarlet beans and sweet morning-glories ran over the window, and tall sunflowers shaded the doorway, and the tasseled corn waved above the flowers, while all around, the green leaves and gay blossoms crowded through and above the rustic fence. Near this little home there were handsome dwellings in all stages of erection, and ambitious men that could find no time to make a garden nor build a dooryard fence, and refined women that could have no flowers the first year in their new home, while all the summer that simple old couple were living in a garden as complete in its simplicity as though it had received years of culture. Here was a lesson by which all might profit. Hundreds of homes now destitute of bloom and verdure could be made lovely if their owners would be content to begin with the old fashioned shrubs and plants, everywhere abundant, and never wait till novelties can be purchased, and money and time expended in beautifying the home.

It is injustice to expect the laboring farmer to leave the imperative work of the farm to indulge in ornamental gardening, and it is folly for him to undertake it; but no matter what his work or how many his cares, he can set apart a portion of his farm for a door yard, a pleasure ground about his dwelling, and within it he may have, without money, and with only a small amount of labor, four of the most beautiful things that adorn the earth, namely, grass, trees, vines and flowers. With these alone, the home may be made delightful, attractive in appearance, and more valuable for such improvements.

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One great mistake in the door yard, is in making it too small. It should be spacious. There is room enough on every farm for that; large enough for social gatherings, children's picnics, or the tea table in sultry summer afternoons. This will necessitate ornamentation; then the ground should be subdued, cultivated and sown to grass. If there is not time to do this for beauty alone, a crop of grain would repay the labor; more than one farmer's wife has lived in a field of oats one summer, that the grass seed might take root and become a solid turf the second year.

Another mistake is often made in setting trees too near together. This is especially true of evergreens; if the planter could imagine a tree like the Norway Spruce, twenty feet in diameter at the base, each side the door, they would never be set as they sometimes are, not ten feet apart. Large trees which obstruct the view from the dwelling and shut out the healthful sunlight, would add much more to the beauty of the home if set at the back or sides of the dwelling, as artists place them in pictures; others at the gateway or wherever a shady seat would be desirable. Three or four set in a group in the corner would make a charming play ground for children. The kind of trees planted will depend much upon the taste and circumstances of the owner. Fine ones, in great variety, can be purchased at prices astonishingly low, but if these cannot be obtained, which is sometimes possible, the forest trees are abundant in our own state; the hardy maples, the elm and the ash, and the native evergreens, are an ornament to any dooryard.

Shrubbery often becomes unsightly and troublesome, if very near the walk or doors or windows, and sometimes becomes so large as to make its removal necessary; if at some distance from the house, if the yard is small, at its extreme limit, shrubs and bushes will be found more satisfactory. A hedge of the hardy roses, such as have lived for a century in eastern gardens, or the old time lilacs with their sweet bloom, or the honeysuckle, or the snowball, will always give pleasure. After these there is no growing thing that will add so much beauty to rustic bower, or simple porch, or humble dwelling, as creeping vines, covering beauty and deformity alike with a lovely drapery of green. Among our native vines there is none more desirable than the

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Virginia creeper, woodbine (*ampelopsis quinquefolia*). It clings readily to walls and smooth surfaces, and for this reason has become widely known as American ivy. Hardy in all soils and situations, it is one of the good things that are not delicate, and need not be rare. It is found in great abundance in our forests, and with only a little painstaking, hundreds of rural homes might be adorned with this charming vine.

So little as this could be done for every farmer's dooryard in the land. If a spacious lawn, with growing trees and flowers, could be seen around every dwelling, and a vine at its doorway, what a change would be created in the appearance of rural homes. What beauty would be added to the landscape; but this need not be all. Perennials of many kinds will live for years with but little culture. The splendor of the lilies is not to be excelled, nor the gorgeous color of the tulip, nor the bright bloom of the dear old peonies. Annuals require more care, but something can be selected, from the delicate Abronia to the hardy Zinnia, that will require but little care, and brighten the living green with their gay blossoms. These summer beauties should have a place very near the house, where they can be seen and enjoyed, when domestic duties keep one in doors all the day.

The arrangement of the dooryard adds much to its appearance, and should be regarded, when consistent, but those who have little help, and less time to do the work of planting and cultivating, should never wait for elaborate plans to be perfected. One who knows can assure you that flowers will grow and bloom, and give pleasure and comfort to those who love them, all unconscious of their surroundings. There is beauty always in growing grass and leafy trees and blooming flowers, wherever they are; they may be nothing rare or wonderful; there may be no artistic arrangement about them, but there is the same mysterious beauty of plant life, the same bright colors so delightful to children, and a measure of the same refining influence is felt by those who love these humble beauties, as that awakened in æsthetic natures by the most exquisite floral treasures. We were never so conscious of this as at one time while calling on an invalid friend. Her apartment was beautifully furnished with the luxuries of wealth,

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and all the varied comforts that affection could suggest; loving friends vied with each other in bringing the choicest fruits and rarest flowers; presently a little girl, clad in plainest attire, came in with a tiny bouquet of zinnias, pinks and marigolds; the sick lady received it, we fancied, with a higher appreciation of the spirit of the gift than she would have done had it been a costly bouquet; it was the messenger of love, and was placed upon her table among sweet roses, fragrant heliotropes, and the loveliest of white flowers. It is ever thus, the best we can do is always acceptable; the lesson of the one talent is ever at hand.

We are told by those to whom increasing years has brought experience and wisdom, that the pleasure of acquiring a competency, of building and furnishing a home, is far greater than the enjoyment of accumulated wealth. This is especially true of the outward adornings. It is a work, too, more lasting in influence than any display of art in the erection of the dwelling. The houses we build begin soon to decay; the trees we plant become more valuable with age; if we hasten to gather about us the treasures of nature we secure a continual pleasure; then as the years go by, and the farm is improved, and flock and herds increase, and barns are filled with bountiful crops, when the new house is built, there will be lovely trees to shade it, and fine old shrubbery and sweet flowers to adorn it. One home like this brings often to mind a friend, one of the early pioneers of Wisconsin, who, with her husband, had accumulated a handsome property; the farm had been cleared, the new house built, in which they had lived but a short time when a fatal disease assured us that a few months at most would terminate her useful life. While sitting by her side, one lovely summer afternoon, she looked through the glass door opening upon the piazza, and pointing to the old log house with its green dooryard, she said: "There I have passed the happiest days of my life; I took more comfort in that little home, than ever I have here; daughter and I leveled the ground and sowed the grass seed, and planted the trees and flowers; now she is gone, I soon shall follow, and our work will be left for others to enjoy." We often pass that house; a cultivated field has taken the place of the little dooryard; the

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flowers have been removed to other gardens, but still we see in memory the Phlox and the Columbine, the roses and the lilies, while the trees which remain whisper a requiem to the departed. There is no worldly good for which we toil that is greater than such a home. It is an enduring legacy to our children, a permanent example to others, and an added beauty to the earth that will remain when we have passed away.

We who are passing the meridian of life turn instinctively to the home of childhood. We see it ever in memory, as when we left it in the long ago, by mountain or plain, by river or seaside, in the green isle of the ocean, or in merry England, or flowery France, or on the banks of the Rhine. We remember the old dooryard where we played, the trees we loved, the flowers we gathered, the brother and sister who shared our childish sports, the mother who waited our coming, the hour when we watched for father's return; we can almost hear the childish laughter, the joyous greeting, and the evening song. O, we may wander far and wide, there is no place so dear as childhood home!

> "No streams so sweet as those from which our young lips have drank,
> Pressed to its surface, o'er the grassy bank."

Shall we give to our children such precious memories of their childhood? Shall we pause amid the perplexing cares of life, and take the time from days of labor or hours of rest to plant the trees and grow the flowers, that with their refining and elevating influence will ever lead upward to the great Creator? If we can purchase the wondrous beauties of the green house and nursery, we can make another Eden in which to dwell; if we cannot, shall we not spread a carpet green and bright within the little dooryard, and take the old time beauties, and forest trees, and wildwood vines, and like the old German couple, or the child of the laborer, make hearts glad and homes happy with our old time flowers? Shall we make homes perfect in their adornings, or charming in their simplicity? lovely to behold, delightful to possess, the joy of returning children, who will ever exclaim, with a thrill of delight, "This is my own 'sweet home!'"

In childhood, when conning our lessons in the old school room,

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we often looked westward to find in a distant territory the settlement of Green Bay. To-day we gather here to find a beautiful city, surrounded with nature's varied scenery of valley, lake and forest, enriched by cultivated farms and finest market gardens, with choicest fruits of tree and vine within our youthful state. A city old in historic memories, but young and fair in summer robes, with people who, amid the perplexities of business and the pleasures of wealth, have never forgotten to beautify their streets or adorn their homes; and more than this, who have shown us here that skill and energy and tireless labor has brought from marshy bottom lands and sandy plains, and rich and rocky hillsides, fruits as fine and flowers as fair as those which grow in prairie gardens. Kind greetings from many friends; splendid productions from garden and farm; excellent teachings of their care and culture, and most beautiful entertainment, have made glad our meeting; and the memory of this day will long remain, bright as the water of your beautiful bay, green as your stately trees and sweet as your fairest flowers.

In the absence of Mrs. Lewis, her paper was read by Mrs. D. C. Ayres, of Green Bay.

HOW TO MAKE RURAL LIFE BEAUTIFUL AND ENJOYABLE.

Mrs. H. M. LEWIS, Madison.

"He prayeth well who loveth well,
Both man and bird and beast;
He prayeth best who loveth best
All things, both great and small;
For the dear God who loveth us,
He made and loveth all."

Man made his first appearance upon earth in a garden, as a horticulturist, and here the first horticultural society was formed according to the instincts and inspirations of mankind. Here the love for a garden germinated, and this love has been by nature kept burning ever since; and we alone are responsible if it does not continue until our whole lives are illuminated, gladdened and

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beautified by its presence. We are too prone to plod along with bowed head through the dust and turmoil of life without regarding the green valleys, cooling waters and mountain aspirations of our soul's best thoughts and hopes. Our lives, at the longest, are but short, and we should gather all the sweetness possible into them. If we do not, God and nature will hold us responsible. We seem to forget that our father is watching over us, and that He is constantly producing scene upon scene for human nature's daily food, for "flowers may bloom, trees may wave, brooks may ripple, and the whole earth blossom into beauty, and we take no heed;" it really seems like slighting the gifts that God has bestowed. We sometimes hear the overburdened heart exclaim: "Life has no pleasure or sunshine for me; it has nothing but sorrow and toil, and I shall rejoice when I lay it down and sink into the last, sweet, restful sleep." Ah! sad, indeed, is that poor diseased soul and body, whose hopes and aspirations for happiness are gone.

One of nature's implacable laws is, that everything having life shall work, man especially; if not with his hands with his brains. There is no doubt but labor is one of the greatest blessings to mankind, and labor in moderation instead of shortening the term of life actually increases it. But we must conquer labor in some way or it will conquer us. The fact is, most of us are devoting a great share of our lives to useless drudgery; shutting out the beautiful and immortal parts of our nature. We must study to simplify our lives, that we may have more leisure to live; for when we come to die we may discover that we have not lived, but only existed.

Much is said at the present time of the hardships and discomforts of the farmer life, and no one can deny that it, as well as other crafts and trades, has its hardships. But, of necessity, must it be harder than any other life? We answer, most decidedly, no, if properly understood and directed. In farm life the only really discouraged ones seem to be the women. Too many men delude themselves with the idea, because women do not complain, that they are getting along comfortably and are comparatively happy, when, in fact, they are spending lives in such extreme

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drudgery that soul and body are dwarfed to such an extent that they are little more than toiling beasts of burden, when they should be the queens and honored women of the land.

Could we have been permitted, this lovely June morning, to have peered into the kitchens of thousands of well-to-do farmers in our beloved state, we should have seen women, many of them not overstrong, beginning the work of the day, where, with preparing palatable meals, attending to the milk and buttermaking, and other pressing duties of the day, the hours too soon fade away; at last the evening lamp is lighted, then with busy fingers the needle is made to do its work, for

> "Her boys at school must look like others,
> She says, as she patches their frocks and hose;
> For the world is quick to censure mothers
> For the least neglect of children's clothes."

It is toil, toil, toil, with many of these women from early morn until late at night, with the work never done. Is it any wonder that many of them become discouraged, and regretfully say, "I never have time to become acquainted with the better part of my children's natures." This great loss the children as well as the mothers feel. Not many weeks ago I saw a grandmother fondly petting a little grandson, saying, as she did so, to the little one, "I never knew babies were so like angels before, but I really believe, when your papa was young like you, he was exactly like you, and I had so much work to do that I never knew it. I will make up for it now, you dear one, by loving you as I ought to have loved him." Let us ask ourselves what can be done for these overburdened women of our land, and we still have faith enough in God, and the innate goodness of man, to believe that most of them will yet be lifted out of the deep shadows into sunlight, bright and beautiful.

First, the farmer, as well as his wife, must be educated to believe that the payment of $1.50 or $2 a week for a good, strong pair of arms in the kitchen is not money wasted, but money well invested; money that pays good interest, at the cost even of some comforts and luxuries of life; for with it is gained time, which means health, strength and education for themselves and little

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ones. No person can work more than nine hours a day and enjoy perfect health, morally and physically. If no help can be afforded, every convenience possible should be provided, both within and about the house, and the living made as simple and healthful as possible; and the men and boys should assist in the household duties, if there be no girls in the family, during the busy season. This is surely no more than right; and if this is done, more contented, healthy children will be born into the world, and the faces of mother and children, now grown so worn and unhappy, will be wreathed in smiles. I would that all men could give to their wives and families more sympathy, more love and more money, as their own legitimate earnings. We should remember that the soul, brain and heart of man, woman and child is the same, and that God has given man the strength and strong shoulders, and that in helping all around him he is helping himself.

More days of pleasure and recreation should be introduced into American life, for no people have so few holidays as we; and no people have so much need of them, for we are an industrious, ambitious people. In Russia, Germany and France, they have ten holidays to our one. Such days have a tendency to make people contented, satisfied, and happy, for it takes them out of themselves and out of the worry and trouble of every day life for a little. In farm life, if members of the household study to introduce occasionally some little variety into every day life, it would be well; for instance, a family excursion into the woods, a boating excursion upon the lake or river, a musical, literary or reading club; all these things are perfectly practicable in a well to do farmer's life. A beautiful custom that many mothers have, borrowed from the English and Germans, is to have the tea table spread under the trees on birthdays and Sunday evenings. If you have never indulged in such a supper, you cannot conceive how refreshing and delightful it is, even though the meal be composed of no greater luxuries than plain bread and butter, with fresh berries, and a glass of milk. Little pleasantries like these are not necessarily expensive, and the effect is truly magical and refining, for fresh thoughts, pleasant manners and kind words are sure to be introduced. If some of the deformities attending

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rural life could but be removed, it would be the most delightful and happy life known to mankind.

We are as yet a people in a new land, and the study of our lives has been thus far the establishment of ourselves in comfortable homes. This done, let us, as horticulturists, do something for the future good of our state; something that will interest our people, young and old, and bind us, soul and body, to our glorious western homes. Let us make such homes and beauty spots that our fame will resound from sea to sea.

The attention of our people, in country and city alike, should be largely directed to landscape gardening. England, the greenest, the most beautiful country in the world, owes its chief charm to this grand art. Washington Irving says: "The English people, more than any other people, are strongly gifted with the rural feeling. They possess a quick sensibility to the beauties of nature, and a keen relish for the pleasures and employments of the country." * * "The taste of the English in the cultivation of lands in what is called landscape gardening is unrivalled. They have studied nature intently, and discover an exquisite sense of her beautiful forms and harmonious combinations. Those charms, which in other countries she lavishes in wild solitudes, are here assembled round the haunts of domestic life." * * "But what most delights me, is the creative talent with which the English decorate the unostentatious abodes of middle life. The rudest habitation, the most unpromising and scanty portion of land, in the hands of an Englishman of taste, becomes a little paradise. The sterile spot grows into loveliness under his hand, and yet the operations of art which produce the effect are scarcely to be perceived. The cherishing and training of some trees; the cautious pruning of others; the nice distribution of flowers and plants of tender age and graceful foliage; the introduction of a green slope of velvet turf; the partial opening to a peep of blue distance or silver gleam of water; all these are managed with a delicate tact, a pervading yet quiet assiduity, like the magic touches with which a painter finishes up a favorite picture." * * "The effect of this devotion of elegant minds to rural occupations has been wonderful on the face of the country. A great part of

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the island is rather level, and would be monotonous, were it not for the charms of culture; but it is studded and gemmed, as it were, with castles and palaces, and embroidered with parks and gardens. It does not abound in grand and sublime prospects, but rather in little home-scenes of rural repose and sheltered quiet. Every antique farm-house and moss-grown cottage is a picture, and as the roads are continually winding, and the view is shut in by groves and hedges, the eye is delighted by a continual succession of small landscapes of captivating loveliness."

Is it any wonder that the English love rural life and pursuits? It is of vital importance to us, who are notably an agricultural people, that we be educated up to the highest point agriculturally, and, if we are to have rural art become widespread, we must begin with the growth of the country, at the fountain head of education, and in this work woman, with her quick eye of beauty, must lend a helping hand.

We ought to catch more readily the beauty and inspiration of the scenes about us, as a people. We are too apt to believe that the only riches of this world consist of dollars and cents; and we are oftentimes too thoughtless in regard to surrounding homes and schools with the comforts, little elegancies, and means of recreation that the young require, and will have; and what are the consequences? The children, male and female, are restless and dissatisfied, and have no taste for rural life, and, as soon as circumstances will permit, flee into the overcrowded towns and cities, there to engage in mercantile or other pursuits, for which they are unfitted, oftentimes making a complete wreck of lives that should have developed into strength and beauty. We ought to see in every country town and village a lovely park, consisting of several acres of land, nestling in among the green trees, hills or valleys; surrounded by a neat stone wall, or fence, encircled in a perfect wreath of green. In some beautiful spot, perhaps a corner, the school house should stand sentinel. And in place of the tumble-down school houses now so often seen, we should have artistic Gothic, or other comfortable structures, neat without and within. In this park, winding walks, rustic seats, summer houses,

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swings, exercising bars for athletic sports, rockeries, etc., should be found, if not the first year, in years afterwards.

The town should buy the land, then the citizens should be called upon to contribute time, money, trees, plants, taste, etc., for its construction, and a thing of beauty would rise up that would astonish and captivate all. This spot would soon be so beautiful that all would feel a just pride and joy in it. These parks or gardens are delightful places for holding out of door religious exercises, and the freshness and beauty of the scene would call many a young man to worship that would never enter church or school house. In this cathedral of nature's, dry doctrinal sermons would be forgotten, and the simple story of God and his wonderful creations flow spontaneously from the pastor's lips. We ought to have more out of door exercises in every church and society. These parks or gardens are also suitable places for holding festivals, croquet parties, etc., and they are easily lighted with Chinese lanterns at night. This is a subject that will enlist the affections and interest of our women, for they are born with a high appreciation of the beautiful and useful; and will not these influences surrounding the young mould their characters for good; for the love of books, nature, home, and other pure and refining influences must follow. Such a park as this will pay for itself in the end, by adding in value to the price of your lands, and visitors and strangers will be attracted to the place where the people are enterprising enough to create such beauty spots. Our people now have means to afford anything rational that will interest, benefit and attract our citizens, strangers and visitors.

We, as horticulturists, or as God's husbandry to whom the earth was given, are the ones to arouse the minds of the public to the importance of this work, and as soon as our people are fully awake, we shall be greatly surprised if the progressive people of Wisconsin, whose state motto is "Forward," do not act, and the contagion become wide-spread throughout our own and neighboring states.

The work of creating these parks, or gardens, would be a grand monument in honor of any horticultural society or people; for be it remembered, that "He who plants a tree creates a life."

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The inaugural ceremonies of planting the trees and laying out the grounds should be ushered in with music, speeches, feasting and rejoicing, in honor of the great event. When the years have fled, and the child who has helped to create this spot of beauty "grows to manhood, his head covered with snow," comes again among them, the dear old memories that can never die will be revived at sight of the "green trees still green, and growing to bless others," still blessing him, the fruit of whose enterprise, wisdom and courage, he and the coming generations shall enjoy.

"For he who blesses most is blessed;
And God and man shall own his worth
Who toils to leave as his bequest
An added beauty to the earth.

"And, soon or late to all that sow,
The time of harvest shall be given;
The flower shall bloom, the fruit shall grow,
If not on earth, at last in heaven."

Following the reading of these papers, Mr. Kellogg rose to express his hearty approval of the sentiments so beautifully expressed, but he thought the best comments, the best endorsement, was to go home and put them in practice.

Mr. Wood desired to respond to the lessons and good counsel in the papers just read. It is characteristic of the American nation to hold conventions, to get together in crowds and work up their enthusiasm on politics, or some of the great financial or public questions of the day. With these, he could not sympathize, in these, he could not take part with any interest, but it was not so with assemblies like this, where ennobling thoughts like those we have listened to this afternoon, thoughts which are calculated not only to make us happier and better, but to benefit all about us, are presented. The ancients had multitudes of gods, to whom they assigned the care of special departments in nature and in life. They had their household penates, their gods and goddesses of war and beauty, of the vine and of fruits, grains and flowers, etc., each having a special mission and associated in their thought with a separate sphere of action. This perhaps came from tradition, legends or historical myths of special attainments in prowess

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or beauty, great proficiency or enthusiasm in some special sphere of action or love of natural objects connected with their ancestors in the dim past, and they sought thus to perpetuate their memories. It is perhaps something of the same feeling which leads us to associate the memories of individuals, scenes and times with natural objects around us. It is very common for us to do so, and it adds greatly to the pleasure with which we view these objects that they are thus freighted with associations. They recall pictures of the past; pleasing scenes we have passed through, friendships we have enjoyed, and their natural beauty is enhanced by their historic, personal associations. Fredricka Bremer, in her visit to this country, greatly admired what most of us regard as coarse and uncouth, the sunflower, always turning its face to the sun, and now, every time he sees this flower, it brings to mind this talented authoress who has written so much in praise of our country. So too with many objects around him, trees, ornamental designs and decorations in the door yard, they were associated with persons and events which made them more pleasing and attractive.

On account of threatening showers, discussions were omitted, and the papers on the programme were presented, as follows:

THOUGHTS BY THE WAYSIDE; WISE AND OTHERWISE.

HON. JOHN E. THOMAS, SHEBOYGAN FALLS.

In these days of kite flying, too many of us are liable, in our zeal in managing our kite, to be drawn clear off our feet; so that our contact with mother earth is completely severed, and hence the possibility of our forgetting that we are of the earth earthy. Much has been written about man's ingratitude to man; would it not be well to look about us a little and see if man has not been ungrateful to good old mother earth, who for so long a time has stood in the great pantry of nature, surrounded with those delicate and toothsome goodies, so palatable and nourishing, ready to hand them out to those of her children who have done her bidding and have been good, and have kept their hearts and hands clean? In these days of straying from beaten paths and obliter-

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ating of ancient landmarks, would it not be well to call up a little early history, and from its record get a starting point?

"In the beginning God created the Heaven and the earth, and the earth was without form and void; and darkness was upon the face of the deep, and the Spirit of God moved upon the waters; and God said let there be light and there was light." "And God said let the waters under the Heaven be gathered together unto one place, and let dry land appear." "And God said let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth." The waters were gathered together within their bounds, the seasons were marked off and established, the sun, moon and stars were assigned to their places, and when the first Great Cause had completed all useful preliminaries, then created He man and gave into his keeping the earth and the fulness thereof. As the light was and is essential to the fructification of the earth, so the cultivation of the soil is essential to man's happiness, and may be called the fourth round in Jacob's ladder that leads from earth to heaven. The three principal rounds of this remarkable ladder, as seen by Jacob in his vision, were faith, hope and charity; and how often are we as horticulturists called to a contemplation, if not to a vigorous exercise, of those cardinal principles? Faith in the Divine assurance that the herb shall yield seed after its kind; hope that due diligence shall bring its reward; and in case of failure from causes beyond our control, then should come into play that superlative Christian grace which enables us to say: "The Lord giveth and the Lord withholdeth; blessed be the name of the Lord."

In moody moments, while thoughts were wool gathering in the fields of speculative philosophy, your humble servant has built up a theory that there is a striking analogy between animate and inanimate matter, in this: the structure of the earth is typified in man. The rocks of the one are the bones of the other. The great rivers and the small rivulets are the veins and the arteries, and the heart that throbs and beats, sending the life currents through this wonderful human body, is typical of the great ocean that ebbs and flows, and by virtue of those subtle influences so far

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beyond our comprehension, plays its wondrous part. The tears of joy or sorrow, shed by us, are typical of those cloud tears that bring either life and joy to earth and its verdure, when timely and gently dropped, or sorrow, devastation and desolation, when too copious, and the result of strife and contention of the elements. Even the verdant garb put on by earth is typified, in analagous form if not in color, by the human hair, and a barren spot in the great domain is not more repugnant in the sight of many than is the bald pate of the lord of the manor. Right here we confess to a little difficulty in holding the analogy, for the barren spot on earth is not unfrequently the result of a *want* of cultivation, whereas the other barren spot may be the result of *too much* cultivation on the part of the owner, or, possibly, on the part of an active, vigorous and determined helpmeet, who has a life interest in the estate. And, let it be said, that it is a duty, and should be a pleasure, to restore the waste places on earth to pristine productiveness, for reasons too patent to enumerate; and is it not a duty on the part of bald married men to put forth every legitimate effort to preserve their hirsute crowns, that one of the time honored and cherished prerogatives of an amiable marital partner may be preserved? And as breaking up and harrowing, in one case, are the well recognized steps towards improvement, frequent baptism and breaking up will often bring about wonderful results in the other. In fact, in the latter case both the baptism and the breaking up are too often neglected. This testimony, coming from this side of the house, ought certainly to be taken by the other side as valuable evidence. But to continue. As the face of mother earth may by judicious effort be made to blossom as the rose, so may the face of man. Let no one dispute this. It is the result of close observation for nearly half a century, and is a cherished opinion. But who has not seen the blended hues of the rose, the pink and the violet on the face of the maiden? and on the ———, if there be one such here, tell it not in Gath. *It comes from eating strawberries.*

The orb of day, the great central, vivifying influence in nature, is typified by the intellect of man, the scintillation flashed out by the eye, when aroused, or gently reflected, when in repose, like

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the pale, soft light of the moon, or beaming steadily with a steadfast and dignified purpose like the fixed stars. In physical geography, a high point of land extending into the sea is called a promontory, and the character of the country back of it is frequently determined by the size and character of the promontory. So that promontory on the human face, called the nose, is an index to the character of the individual who sports it, and if one is inclined to be facetious, the analogy may be carried a little further; but I desist. As the ground may by culture and favorable atmospheric conditions become fruitful, so man may be improved by culture and natural surroundings, and the graces of the human heart may be multiplied and beautified; and as both culture and favorable conditions are essential in the one case, so not only the culture of the schools must be called in to brighten the intellect, but the surroundings must be favorable to enlarge the understanding. No broad minded, clear headed, generous hearted man or woman can be reared without direct contact with earth and its productions. Brilliant men and women there may be, in some specialty, who never turned a spadeful of earth or watched the growth of a plant or flower, but that one can cut loose entirely from mother earth, and still grow up a physical and mental stalwart, is not probable. In Green Bay, and to a Wisconsin audience, it were superfluous to allude to Bible history, but I must remark that at the beginning of man's career, he took charge of a garden. The arrangement seems to have been, that he and the partner of his joys (they had no sorrows then) were to be exempted from manual labor. This undoubtedly caused the trouble. At all events, idleness is supposed to have bred mischief; and hence, that blessing in disguise, which decreed that henceforth in the sweat of the face should man eat bread. A blessing in disguise say we; for who would exchange the glow of health that comes of contact with rural pursuits, rationally followed, even if coupled with the so-called deprivations, for the hectic flush of the cramped and sedentary life of the devotee of gilded halls, secured from the sunlight, and where no aroma of earth is allowed? The importance of this contact with the ground and its plants and flowers is now acknowledged all over the civilized world. In

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our largest cities, intelligent householders, heads of families, whose means permit, seek room for their dwellings with plats of grass and spots for the pansy bed, if not for vegetables and fruits; and great parks are laid out and neatly kept, not only as breathing places and to please the eye, but for the absolute, moral influence which such spots exert upon the ignorant and naturally vicious. This theme affords a vast field for philosophic thought, and is worthy the consideration of the humblest and the highest in the mental and social scale. This desire to get out of door breathing spots is instinctive, and with many, a blade of grass or common daisy has a charm that beggars description.

A few days since, I passed from Chicago to St. Louis over the broad prairies of Illinois, and from St. Louis to Omaha, crossing the vast territory embraced in the state of Iowa, on the route traversed by the Chicago, Burlington & Quincy Railroad. I gazed with wonder upon the vast proportions of those structures, the great bridges at each of the cities last named, peered into the depths of the Father of Waters, looked upon the boiling, seething flood called the Missouri, returned again over those vast stretches of treeless plain into the cultivated fields and through occasional copse and woodland into the city of Chicago, arriving early on a bright, beautiful morning, full of vastness, literally swollen with the bigness of what I had seen. From the train, I sauntered along past a few blocks to the house of a friend and relative, and while passing a row of genteel tenement houses, I saw a quiet looking, friendly faced man out in the early sunlight, with a rake, scratching a few stray straws and shreds of hay stalks out of a plat of grass about four feet square and surrounding a lamp post. Goodness! what a let down to my feelings. Here was a man evidently with his heart in the right place, but with his body in the wrong place. I thought how he would enjoy a plat of an acre or two, with melons, squashes and radishes, with a square bit for pansies, pinks and lilies of the valley. How many appreciative souls are cooped up in a dust box who would enjoy broad acres. It has been truthfully said we are not all alike; some good people have no more reverence for trees and shrubs and vines than for a rail. An artist who was sketching

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near a suburban town was accosted by a rustic with, "Now that's real kinder nateral, aint it? But what makes you waste your time on them darned old ellum trees? Ye'd orter go right up back here onter Skinner's hill, where ye cud see somethin' sorter interestin', the Town Hall, the Baptis' Meetin' House, and the new brick high skule." Could Daniel Webster, think you, have made that masterly speech in reply to Haynes had he been reared on a city lot, sixty by one hundred and twenty? His home upon a farm, contact with fields and trees and plants and flowers, his musings in the grateful shade of the grand old elms, his loiterings by the banks of the bubbling brook, the inspirations from the songs of silver-tongued birds, the bleating of fleecy-backed sheep, and the lowing kine, whose breath he said was sweeter than the rose's — all tended to enlarge, dignify and mellow his great, big heart and brain, and thus developed him into a statesman.

We cannot all become Daniel Websters by weeding carrot beds or cultivating radishes; still, no man or woman — worth saving — but is better, nobler, purer and nearer Heaven by tenaciously clinging to the skirts of mother earth, and cultivating a love for what God has made and pronounced good. And how a head of a household, in this land of great possibilities, can hope for Heaven while rearing a family with never a tree or shrub or clinging vine on or about his dwelling place, is beyond comprehension; and how the same can expect to escape the fate of the savage, when living continuously upon salt junk and dry bread, with never a bit of the fruit of the tree, a berry from cane or vine, or a succulent vegetable, fresh from the earth to tickle the palate or cool the blood, is one of those hidden mysteries past finding out. Greece in her palmiest days honored her favored sons, who had entitled themselves to distinction, by encircling the brow with a wreath of laurels, and holy writ abounds with illustrations in which trees and plants and flowers are conspicuous. "The glory of Lebanon shall come unto thee, the fir tree, the pine tree, and the box together, to beautify the place of My sanctuary; and I will make the place of My feet glorious. For as the earth bringeth forth her bud, and as the garden causeth the things that

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are sown in it to spring up, so the Lord God will cause righteousness and praise to spring forth before all the nations." "For He shall be as a tree planted by the waters, and that spreadeth out her roots by the river, and shall not see when heat cometh, but her leaf shall be green; and shall not be careful in the year of drought, neither shall it cease from yielding fruit." So may this society never cease yielding fruit to the advantage and delight of all lovers of the good, the beautiful, and the true.

FRUIT GROWING IN NORTHEAST WISCONSIN.

J. C. PLUMB, MILTON.

For the purposes of this paper, I will include that portion of the state north of the parallel of forty-three degrees, Milwaukee, and east of Fox river and Lake Winnebago; embracing an area of about 4,000 square miles, or one-fifteenth of the state; but in view of its natural advantages for fruit growing, this deserves special attention in the pomological records of this state.

The soil varies from the loose limestone drift to a heavy arenaceous clay, with subsoil of the same material. Along the western border of this district the Cincinnati shale crops out in several places, and also, occasionally, the Galena limestone, which occupies the immediate upper valley of the Rock and Lower Fox rivers.

Northwestern Wisconsin is undulating, and generally well drained, and the finest natural situations for orcharding abound on almost every forty acres of upland. The native timber is mostly hard wood, with wild fruits everywhere abundant and varied. The strong points of advantage to the fruit grower in this region may be enumerated as follows:

First. The soil is generally sufficently porous for good natural drainage. It is universally strongly magnesian, and contains all the elements of tree growth in the best proportions known to agricultural chemistry. The tendency is to excessive fruitage. The contrast in this respect with our prairie orchards is very marked. Trees of a given age and size will yield double the fruit in this region that they will in the prairie region of the

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west. This is the result of the strong combination of mineral food in proportion to the amount of humus or decaying vegetable matter; which latter produces excessive wood growth but not fruitage. To one unaccustomed to note the contrast it is a matter of great surprise that such enormous loads of fruit should be borne and perfected on the limestone soils of this region. The quality of the fruit is as marked as the quantity, excelling in rich juices and high coloring that produced in any southern or southwestern region. This is especially noticeable at the fruit shows of your county and district fairs.

The *second* condition of success is the everywhere abundant elevations, namely the rounded hills and commanding bluffs, which afford upon their summits the most favorable sites known west of the great lakes.

The *third* condition of success lies in the adjacent large bodies of water, which temper the extremes of heat and cold during the growing season. The result of this is health of foliage — one of the most important points in the growing and perfection of fruit. If, during the growing period, the foliage is injured by insects, hail or fungoid growth or any break in the processes of healthy nutrition, the fruit will drop or become deformed. Such is often the case in southern Wisconsin and all of Illinois. Again, if the climatic conditions are favorable, and the soil too rich in vegetable matter, the fruit will lack coloring and firmness of texture; but in these particulars, this region has the highest conditions of success known west of the great lakes. The evidences of this are not wanting. Every year we find the finest specimens of fruit from Milwaukee or Sheboygan counties. In my annual visits to the county fairs of this state, I find the finest individual collections and specimens from the Niagara limestone region. This year is one of comparative scarcity of apples in this state, yet it is less so here than in any portion of southern Wisconsin.

Last year, we of the south were frosted the fifteenth of May, eaten of worms in June, and blighted all summer, so that the very abundant promise of early spring was not fulfilled in the harvest, while you of this region had the most abundant yield, of the most perfect fruit. While these are facts abundantly

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supported, it is also the fact that the best natural locations of this region for growing the apple and pear are not chosen for that purpose by the majority of planters. The farmer's garden is usually the first place for the orchard, and as that is almost universally the more alluvial and warmest location of the farm, and made rich by the addition of the farm manures, it is no wonder that the fruit trees do not survive the forcing process longer than to bear a few crops of fruit. Abundant examples are found all over this region, from Fond du Lac to Sturgeon Bay, and from Milwaukee to Green Bay, showing that where the cool summits of the hills and northern slopes are chosen for the orchard, they are successful and abundantly fruitful, with only ordinary care. I may cite you to the remarkable pear orchard of this vicinity, which has been in bearing for thirteen years, and been in blue grass for the whole time, and yet for health and fruitfulness would rank well with the pear orchards of New Jersey, the grass being a check to excessive growth, and consequent blight, and the pear roots find most perfect nutriment in the subsoil of those drift hills. So of any apple orchard on similar locations — they will be found a success beyond any doubt.

But you must plant on the hills and cool northern slopes, and medium soils, and cultivate enough to give a fair growth. You have not only chosen the valleys, but have planted any and everything the itinerant peddler has chosen to furnish from the surplus of eastern nurseries. Most of you wished to try the old eastern favorites, and, with us, have had to give them up, except in some locations along the Michigan shore. With the most hardy varieties and careful selection of location, apple growing is a success in this region, and the most extensive and careful growers will soon find commercial orcharding a safe and remunerative business in the bluffs and on northern slopes.

One very important condition of successful apple growing is found in the cool, even temperature of autumn.

You also have varieties which may be kept through the winter, which in central and southern Wisconsin would be only fall apples. This gives you the advantage of growing the Fameuse, Fall Orange, Utter, Plumb Cider, Alexander, and others of their

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season and qualities for winter market, known as fall fruit, but if grown here will become winter apples. The advantage of this is very great, and only to be duly estimated by those who know how earnestly we have sought for good hardy winter apples for the northwest.

I might also mention the facilities for transportation which this region affords, with the finest water communication on two sides, and traversed by four great lines of railway — and this, with your proximity to a fruitless mining region, second to none on the continent. These considerations will weigh heavy against the easy-go, no-market region of the south and southwest. I will also say that it is found a fact, that the finer varieties of Siberians, grown in this cool climate, will bring enough more in the Chicago market than those grown in that latitude to pay cost of transportation. They here develop quality and beauty that is there unknown.

You will ask, "If these things be so, why not remove to this part of the state, and show by practical demonstration your faith by your works?" To this I reply, only the necessities of the case, disinclination to change, compel me to remain so far south. Friend Smith's oft repeated exhortation to "move up into this Christian country," is beginning to tell, and I am free to say, that were I to change it would be at least one hundred miles north, rather than the same south or west, for commercial orcharding for apples and pears.

Regarding varieties adapted to this region, I am willing now only to say that there are certain varieties in each locality that are doing fairly well, and it is the work of this society, through its committee of observation, corresponding members and local societies, to prepare lists of these for the benefit of each location and the state at large. The Duchess, Astrachan, St. Lawrence, Fall Orange, Fameuse, Haas, Plumb's Cider, Golden Russet are successful in nearly every part of this region, and in more unfavorable locations, the improved Siberians afford abundant fruit for home use, during most of the year. Here, as generally through the west, you must not grow too fast, but grow slow, and so avoid blight and winter killing. I honor the

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pioneer in this work of overcoming the native difficulties of fruit growing, and am glad to know that our host, the Brown County Horticultural Society, is proving itself a powerful aid in establishing fruit growing upon a sure basis in this region.

EVERGREENS.

HON. A. A. ARNOLD, GALESVILLE.

Rare trees and shrubs are desirable for the same reason that anything that is rare or beautiful or useful, or combining all of these, is desirable. The diamond is not near as useful as gold, nor gold as iron; still, each is valuable in a greater or less degree on account of its scarcity, its beauty or its utility. Ideas of beauty are developed prior to those of utility in every stage of human development, from childhood to manhood, from the barbarian to the civilian. The beautiful may be the useful; the useful may be the beautiful; the beautiful adorns, pleases the eye, gratifies the senses; the useful appropriates, develops, systematizes; these last come with civilization. That to be beautiful it must embrace the useful, is developed in mankind in the same ratio with the advancement of knowledge. It was a rude period and a rude people that admired painting, architecture or oratory that appealed alone to the fancy, the heart or the fashion. With the cultivated, that painting is most prized that best brings out the design of the painter. That building most admired that best displays symmetry, strength and durability. So of oratory, the day has passed for mere oratorical flourish. Facts, figures and logic that appeal to the reason, as well as sentiments that touch the heart, that convince as well as please, is best appreciated by those of mental culture. To appreciate the useful alone, and never enjoy the beautiful, is not natural; still some persons are educated to this, but it is only the legitimate outgrowth of sordid sentiments and depraved impulses. So if we may in our homes combine the useful and the beautiful, we will kill two birds with one stone; it will please the child, for it loves the beautiful (which is one of the strongest and best evidences of an angelic nature); it pleases the maiden, for she must love the beautiful; it will please

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the full grown man and woman, for they should love and appreciate the beautiful, the useful. We will enjoy it. This it is that makes *home;* for what is home without joy? Comforts or luxuries, neither, of themselves, bring enjoyment; but those things, whatever they may be, that make our homes attractive, above all others, are just the things that we cannot afford to neglect; if beautiful, they are *per se* useful.

Evergreens are one of the things necessary to beautify and make a country home in this northern climate; and that home looks poor and desolate, where there are none. Where there are plenty of other trees, they are not so much missed, but they are ornamental as well as useful, and it is a lonely yard in winter that is without them. We see plenty of them in the cramped little yards in cities and villages, where they are not required near as much to break the wind or to relieve the loneliness, as in the country. Is it true that the inhabitants of the city and village are more appreciative, and if so, more cultivated than farmers are? The mechanic may be poor, with but small means, but he has evergreens in his yard, so that you can just peep through as you approach the house and see how cute his tasty wife looks, cultivating the grounds instead of her heels, as she most certainly would, if she had not this kind of a home to take her time and attention. I wonder if she would look as well if a farmer's wife, in a dooryard surrounded by a board or rail fence, with a pair of bars for a gate, the dooryard all plowed up for a vegetable garden, no evergreens, no green lawns; or perhaps, in a still worse condition, all tramped up, full of chickens, pigs, calves, lambs, colts and children; not a vegetable or flower, not even a green spot of grass, much less an evergreen to be seen, except the man and the woman and their little evergreen children that will always retain the same kind of greenness, unless they get better and different cultivation than they are likely to in such a home. I have no patience with such farmers, for we have as good brains as other men. Why not use them and cultivate a little of the beautiful that is useful? Listen to the excuses. "We can't afford trees." "We don't know how to cultivate them." "We haven't the time." "We haven't the taste." All which are

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vain, except the last. Well, if we have not the taste, let us cultivate it a little. If I could not arrange a yard with evergreens and other trees, so as to please myself and meet the approbation of people of culture, I would get some one to do it that had good taste and judgment, and thus get the credit of having a little taste myself, the same as people get others to select the cloth and cut and fit their clothes for them.

There are no set rules as to the number of evergreens, or as to their arrangement. For me I would have, if I could, a forest of them, build my house in the center, and then cut out patches for lawns, gardens, flowers, roadways and walks; then it would be arranged to suit my taste, here in this cold and hot, hot and cold country, where a man freezes three-fourths of the year and roasts the balance of the time. In a forest of evergreens, the cold winds could not penetrate, nor the hot sun invade, so as to change from comfort to positive torture in almost as short a time as it takes to tell it, which is now often the case, situated and surrounded as many of our country farm houses are. From experience, I believe the cheapest way to get a nice lot of evergreens is to go directly to the nursery, and get our trees. Get good ones, and if well set and mulched, just as they are starting in the spring, ninety-five per cent. of them will live and grow. While those that are taken from the forest have large roots but are not so fibrous, the small roots are the ones that take up the moisture and nourish the tree, and unless the soil is taken up with the tree so as to adhere to the roots, ninety-five per cent. of them will die. If you can find them in a compact soil that will adhere to the roots, if well formed, they will, perhaps, do as well as from the nursery.

A pine tree usually costs nothing but the labor, and in many localities, the same of spruce and hemlock. Pines are not as pretty or tasty for close proximity to the house, but in a large yard, of from two to five acres, they break the wind, yield a good shade and make up the landscape as well as any. The sighing of the winds through their branches is objectionable to many, but these same persons, I notice, are not, as a rule, lovers of trees or even nature, and should be confined to brick buildings in the crowded city.

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Plant spruce in groups, as much as possible, as they are thus less liable to die out on account of the drouths. Norway spruce grow in western Wisconsin faster than any other variety, while the Balsam retains its dark green color better and is generally considered the handsomer tree. Black spruce is the prettiest tree that is hardy in northern Wisconsin, still the Norway and Balsam are the standards. For variety set Red Cedar, Juniper, American, Scotch and Austrian pine. White Cedar or American Arbor Vitæ, I believe, will be found not profitable, except to use for hedges. I have a hedge of this, nine years old, that is seven feet high, four feet wide, and about twenty rods long, and so thick that it will bother a little bird to get in it. This hedge would have been twenty feet high had it not been sheared. I have a pair of hedge shears, about two feet long, handles and all, and with them I have trimmed it every spring as growth starts, since the first year it was set. I bought the trees twelve inches high, and set them eighteen inches apart, and cultivated for five years. I can trim it each time in one day. There should be a light fence in front of the hedge, if along the highway, as it will not do to let cattle to it; wherever their horns tear it, it will take years to fill up, if indeed it ever does. The hedge should never be touched for any purpose except by the pruner, for if everybody is allowed to cut from it, there will soon be no regularity to it, and it will thus lose its beauty. Other evergreens require pruning or heading in to make them grow thick and symmetrical, and as it is not material when this is done, with a lot of evergreens about the premises, there may always be an abundance of small branches to trim the rooms of the house. In small yards, where it is desirable to keep evergreens within due bounds, they may be trimmed very close, and the sooner it is commenced the better to secure symmetry and density of foliage.

Evergreens should only be trimmed by cutting off the ends of their branches. The limbs should grow so that they touch the ground to ensure their being well shaped and hardy. Now and then the limbs of some may have to be cut away to have a look out, but limbs to the ground is the rule. Red cedar makes a fine hedge, and is the best hardy evergreen to trim to

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suit the eye. This may be done so as to represent small towers, urns and animals, almost anything that would be desirable as a yard ornament, were it not a tree but the thing itself. The palpable neglect of this beauty of trees in our country homes, as a rule, is the only excuse for this imperfect essay, for I am no expert in this or any other branch of horticulture. I desire to excite to action in this regard, and promote the utility of these gatherings; not that I expect to benefit any that are at the convention, but these papers are usually published in the transactions of the society and come to the homes of many that may not have the time, the means, or the disposition to attend. I desire to see beauty and utility in our country homes. To this end, set out plenty of evergreens and take good care of them. This is one of the ways.

POSSIBILITIES IN HORTICULTURE.

A. L. HATCH, ITHACA.

In our garden, we have a tree that is said to bear apples without seeds or cores. Another peculiarity about it is, that it is flowerless, having only green buds. Although this may be no great advantage, it is possibly a novelty, that it is flowerless. There is one other attraction that should be noted as important, and that is, that the tree is fruitless, so far. It is possible, however, that we may yet grow something wonderful from this coreless, seedless, flowerless, and now fruitless tree, and if we do, it will give us courage to appear at the fall fairs as an exhibitor.

In another part of the garden we have a lot of the wonderful Crescent Seedling strawberry plants. They are still in their infancy, but we are looking hopefully forward to the time when they will triumph over the weeds. Then like "old Uncle Ned," we may be able to "lay down the shovel and the hoe," and let these self-cultivating plants yield us 15,000 quarts per acre, while we rest and think of new possibilities in horticulture.

Another grand thing we have is a single plant of the Sharpless strawberry; the only one left of ten that cost us two dollars and a half. It is quite small, and was hoed up yesterday and reset, but that need not hinder us from imagining it expanded into a

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huge plant two feet and a half across, with immense berries on stems, holding each a pint or so.

Competition in markets and the needs of consumers, makes necessary varieties of fruits having characteristics not now existing. The boasted improvements of the last few years have nearly all arisen from chance seedlings and hybridization. Hybridizing originates no new quality; it only develops those already existing in the parentage. Very little is known of the way improvements are originated in fruits, and this field of study, now almost unoccupied, promises to be one of the most attractive for horticultural investigation.

The influences that tend to change are, 1st. Culture and training of the plant producing the seed from which new sorts are to be grown. 2d. Change of climate and soil. 3d. Keeping seeds out of the ground from one season to another, allowing the germ to perfect,* and thus establishing more fully the individuality of the variety. 4th. Selection. Earliness and lateness of maturity or season of ripening ought to be easily accomplished in the way.

We make these suggestions with the hope that some one will at least make an effort to produce the early and late varieties of strawberries President Smith so much desires. It is possible we may never learn how to produce sweet varieties from sour ones, or to grow colors of flowers of a different strain from what any particular class has before produced. Still, if we do nothing but modify the season of ripening and the keeping properties of some fruits, it will pay.

Possibly the lack of keeping properties in our small fruits, and the depression of markets by large crops throughout the country, may develop some new methods of canning or saving them, less expensive than those now known. We have already experimented some with such hard, smooth skinned fruits as the currant and gooseberry, in canning them without cooking. It is possible that cherries, grapes, plums and apples may be thus kept. The fruit should be sound and unbroken. Place in glass jars, fill

* Rather to weaken the vitality of the germ, and thus change the form and peculiarities of its natural development from normal growth to fruitage.

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with cold water, and keep in a cold place, unsealed for twenty-four hours. The object of this is to remove air from the fruit. When the air is driven out of the jars, cover air tight, and keep in a cool place. If the air can be entirely eliminated from the fruit and keep out of the jar success will follow, if at all. Perhaps some method of producing a vacuum would assist in preparing fruit to keep without cooking.

In our little vineyard there is now promise of an abundant crop of fruit. As the season advances, some disaster may befall it and disappoint us. Possibly a hail storm may destroy all at once, and we shall have another opportunity to learn a lesson in patience, such as our climate seems admirably adapted to teach Wisconsin horticulturists. With due respect and hopefulness we commend these possibilities to your consideration.

STRAWBERRIES — CRESCENT. — Information as to the Crescent Seedling being called for, Mr. Tuttle remarked that he had not been very extensively engaged in the past in strawberry culture, but was now giving more attention to it, and had set quite largely for a year past of the Crescent and the Wilson. He was acquainted with the early history of the Crescent; had seen the original bed, in the grounds of Mr. Parmalee, in New Haven, Connecticut. When his attention was first called to it, he doubted very much as to its possessing all the merit its friends claimed for it, but on examination of it, side by side with other varieties, he became satisfied that it was a good thing and had set quite largely of it. His own experience with it had been such that he fully believed it would prove all that its friends claimed for it. He had raised no berry that was anywhere near as satisfactory. It yielded with him twice as much as the Wilson; on one-third of an acre, he had picked one hundred bushels this season. The bed was new, but it was a perfect mat of vines; they were so thick that it was impossible to pick the berries without destroying some of the fruit. One woman picked five bushels of berries in a day; and in a day and a half, commencing at nine o'clock, she picked 217 quarts.

The berries were not extra large, but were of good, fair size, averaged well, and held up their size and quality to the end of the

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season. One good quality which this variety has, is its vigor. It is such a strong grower that running out the weeds and grass, it takes and keeps possession of the ground. It is only necessary to keep the weeds and grass down the first season; after that the vines will take care of them. The original bed when he saw it was entirely clean, while beds of other varieties along side of it were so full of weeds and grass as to hide the vines, yet they had all received the same care and culture. At first, he thought and said that such a rank growth must be at the expense of the fruit, that the vines were too thick and strong, but Mr. Parmalee assured him that this was not the fact; the third crop on the original bed was fully equal to any of the others.

As some had told him that it was not a perfect flower, he had planted the Wilson near it, on one side, but the yield there was no better than elsewhere. He should plow up the Wilson and have no other kind but the Crescent. He was satisfied that it was perfect enough to raise good crops.

President Smith said he had not been acquainted with the Crescent as long as Mr. Tuttle. His first setting of them was done a year ago last May. The plants made but a moderate growth during the summer, but in the fall they started and made a remarkable growth, nearly filling up the whole bed where set. This spring he took out 2,000 plants and only cleared a small space. He had doubts in regard to its being a hermaphrodite; from the examination he has given it, he should judge it was not. It had borne well this season, nearly equal to the Wilson, and this is the only variety he had ever raised that had done so, but he did not regard this yield as conclusive proof that its flowers were perfect, for the bed was surrounded by beds of other varieties and the bees worked upon them all. The berry was too soft to bear long shipments. He had been disappointed in its quality, especially its flavor; in his opinion there were many varieties that were superior to it in this respect; he should, for himself, prefer the Wilson. Experts have expressed different opinions as to its quality, but this is a matter of taste in which it is not to be expected that all will agree.

When persons consulted him in regard to what kind of straw-

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berries to raise he always recommended the Wilson. If they were not satisfied with raising only one kind, there were others they might succeed with, but he would advise every one to set them but moderately, until they had fully tested them. The Duncan is a good berry for home use, but it is too soft a berry for transportation, and the yield is only moderate. Were anyone to guarantee him fifty cents a quart for all he could raise, and only ten cents a quart for Wilsons, he was satisfied there would be the most money in the Wilson; at any rate he would put in every acre he could of it, and would risk but a small patch of Duncans. Boyden's No. 30 is a good berry; the quality is very good, but with him, the yield had not been equal to that of the Duncan; would much rather take the chances of raising the Wilson for ten cents a quart than No. 30 at seventy-five cents, yet the originator of it had made himself rich raising it for market, selling it readily at twenty-five, thirty and thirty-five cents a quart, when other berries were bringing low prices.

Mr. Huntley said he was greatly interested in this Crescent; he wanted to know when they could be set out; wanted to set at once; he could not wait. It seemed that all that was needed was to set it out; once started it would take care of itself. Surely it was the berry for lazy, shiftless men. But somehow these new things are always perfect when they first come around and while the price is high. When everybody has invested in them, and the prices are low, they tone down, and generally prove worthless or not as good as the varieties we have already. He would advise farmers to go slow in testing these new things.

Mr. Stone, of Appleton, thought it was not best for farmers and others who were not experienced in these matters, to buy these new things at exorbitant prices. There is but little chance of more than one in a hundred proving a success. Better let the professionals test them, and when they have proved to be good, will be time enough for us to invest in them. He had learned this lesson by experience, buying new varieties of strawberries at five dollars a dozen, which on trial proved worse than worthless.

He heartily endorsed the ideas presented in the papers just read in relation to beautifying our dooryards and homes. Thought

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this was part of the mission of our horticultural societies, and that efforts put forth in this direction would result in great good. We ought also to use our influence to secure the beautifying of our school house grounds. Instead of being neglected, as now, they should be decorated with trees, shrubs and flowers. If the trustees and parents would interest themselves in this work, the teachers and scholars would join with them, and take pride in making the school house and its surroundings as pleasant as possible, and this would tend to create a taste for horticultural pursuits which would lead to the cultivation of trees and flowers at home. The time is coming when our school grounds will be thus made beautiful and attractive, and our children will have here imparted to them the educating and refining influence of horticulture, in addition to the practical lessons of the school.

Mr. Hill said this was an important subject; now, with very few exceptions, our school grounds are open to the commons, bare of tree or ornament of any kind. The common excuse given for such neglect is, it will be no use to improve them; the boys will destroy the trees; children would pick the flowers, and tread down the lawn. This might be true in some instances, where the children see no interest taken in these things at home; but most children love flowers, and appreciate the beauties of nature, and would be easily led to take a great interest in this work. He recalled an instance where some persons commenced this work of setting out a few trees and planting a few flowers around their school house to make it more pleasant and cheerful; soon the trustees had the grounds enclosed; and in a short time the house itself shared in the improvement, was painted anew and the windows fitted with blinds, so that now it is an ornament to the place and the pride of both parents and children.

The following resolutions were then passed:

Resolved, We the members of the Wisconsin State Horticultural Society and delegates from abroad, would hereby express our hearty thanks to the Brown County Horticultural Society for their cordial greeting, and the generous hospitality extended to us during the session of this summer meeting of our society by the citizens of Green Bay; and

Resolved, That this occasion and its scenes shall be ever green in our memories, as the trees which surround the mansion of our President, Hon.

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J. M. Smith, and under whose shade we have held this delightful session; and

Resolved, That we extend our thanks to Mrs. D. Huntley and Mrs. H. M. Lewis for the instructive essays furnished for this occasion, and especially to Miss Emily Smith, of Peoria, Ill., for her instructive and practical address on the subject of her professional life work. Also to Mr. J. Periam, of the *Prairie Farmer*, for his assistance in the discussion of practical horticulture; and

Resolved, That Mr. Periam, with the ladies named above, are hereby made annual, honorary members of this society.

A vote of thanks was also tendered to the gentlemen and ladies of Green Bay, who had favored the convention and added much to its interest by their excellent music.

A vote of thanks was passed, by the Brown County Horticultural Society, to the State Society, for the pleasure and benefit conferred by this convention, and an earnest desire was expressed that it might be followed by many similar meetings.

The convention, by a unanimous vote, expressed their thanks for the courtesy shown by the various railroad companies in granting reduced rates of fare to those in attendence, and the Society adjourned *sine die*.

PREMIUMS AWARDED AT JUNE MEETING.

STRAWBERRIES.

Best exhibition of strawberries, Geo. J. Kellogg, Janesville	$3 00
Second best, J. M. Smith, Green Bay	2 00
Third best, Stickney & Baumbach, Wauwatosa	1 00
Best quart of Wilson, John Spencer, Green Bay	2 00
Second best, G. J. Kellogg	1 00
Best quart Boyden's No. 30, J. M. Smith	2 00
Best quart Duncan, J. M. Smith	2 00
Best quart Crescent Seedling, G. J. Kellogg	2 00
Second best, J. C. Plumb, Milton	1 00
Best quart Monarch, Stickney & Baumbach	2 00
Best quart Downer's Prolific, J. M. Smith	2 00
Best quart Kentucky, Stickney & Baumbach	2 00
Second best, G. J. Kellogg	1 00
Best exhibition of bearing plants, J. M. Smith	3 00
Second best, G. J. Kellogg	2 00

VEGETABLES.

Best six heads lettuce, A. A. Warren, Green Bay	$1 00
Best six bunches asparagus, J. M. Smith	1 00
Best six bunches radishes, J. M. Smith	1 00
Best six bunches pie plant, J. M. Smith	1 00
Best exhibition garden vegetables, J. M. Smith	1 00

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CUT FLOWERS.

Best show hardy roses, Miss Emily Smith	$2 00
Second best, Mrs. E. W. Reynolds	1 00
Best floral design, Miss Emily Smith	1 00
Best show pansies, Miss Emily Smith	1 00
Best show verbenas, Miss Emily Smith	50
Best show peonies, Miss Emily Smith	50
Best show phlox, Miss Emily Smith	50
Best display cut flowers, Mrs. E. W. Reynolds	3 00
Second best, Miss Emily Smith	2 00

PLANTS.

HOUSE.

Best exhibition of roses, Mrs. H. F. Spencer	$2 00
Best exhibition fuchsias, Mrs. D. C. Ayres	1 00
Best exhibition geraniums, Mrs. H. F. Spencer	1 00
Second best, Mrs. E. W. Reynolds	50
Best exhibition begonias, Mrs. H. F. Spencer	1 00
Best exhibition foliage plants, Mrs. H. F. Spencer	1 00
Best exhibition cactus, Mrs. C. J. Lawrence	1 00
Best floral hanging basket, Mrs. D. C. Ayres	1 00
Second best, Mrs. H. F. Spencer	50
Largest and best display house plants, Mrs. H. F. Spencer	3 00
Second best, Mrs. D. C. Ayres	2 00
Best display plants from spring cuttings, Mrs. H. F. Spencer	1 00

GREEN HOUSE.

Best exhibition fuchsias, A. Stone, Appleton	$1 00
Second best, F. Noehle, Green Bay	50
Best exhibition geraniums, F. Spencer	1 00
Second best, A. Stone	50
Best exhibition foliage plants, A. Stone	1 00
Second best, F. Noehle	50
Largest and best display greenhouse plants, F. Noehle	3 00
Second best, J. Spencer	2 00
Best show mosses, lichens, and lycopodiums, Irving Smith	1 00
Best show native ferns, Irving Smith	1 00
Second best, Stephen Burden	50
Best show wild flowers, Miss Lizzie Rowbotham	1 00
Second best, Robert Campbell	50
Special premium on wild flowers, Mrs. McAllister	50

WERDEN REYNOLDS,

Secretary Brown County Horticultural Society.

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MEETING OF THE SOCIETY AT THE STATE FAIR.

AGRICULTURAL ROOMS,
MADISON, *Oct.* 8, 7:30 P. M.

A meeting of the society was called at the Agricultural Rooms, in the capitol, on Wednesday evening, the week of the State Fair, for the transaction of business.

On calling the society to order, the president stated that in accordance with the instructions giving at the June meeting, he had appointed Mr. Stickney to represent the society at the meeting of the American Pomological Society, to be held in Rochester, New York. As the society was not in a condition financially to pay largely for the expenses of a delegate and the collection and exhibition of fruit at that meeting, made it expedient to secure the services of some one who was expecting to attend; and learning that Mr. Stickney was going to be present at that meeting, he had requested him to act as the representative of the society, and to make necessary preparations for the exhibition of our fruit. It was important that we should be represented there, and that there should be a creditable display of our fruit, and as the time was short, it was necessary to take immediate action in regard to it.

On motion of Mr. Plumb, the action of the president was endorsed, and, in reply to an inquiry as to the manner in which the appropriation of $50, voted at the June meeting, was to be expended, he stated that he introduced the resolution, and designed, and thought it was generally understood, that it was to be applied to the necessary expenses for making a collection of fruit for the exhibition, and for the expenses of the delegate in attendance.

Mr. Stickney moved that the president be authorized to give credentials to any member of the society who could attend. Carried. President Smith reported that but $65 of the $100 voted by the society to be expended for the June meeting had been used. He had paid $50 of this toward the premiums awarded in the exhibition at that meeting, and $15 to Miss

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Emma Smith, of Peoria, Ill., for expenses she had incurred in attendance. The balance of the fund he had returned to the treasurer. He was satisfied that the society had never expended such a sum more advantageously, or where it would result in greater good. It had awakened an interest in their local society which would be felt beneficially for a long time to come. It was the first exhibition of the kind ever held by their society, and while they were well pleased with the result, they were eager to continue them in the future, and thought they coul'd make a great improvement on what they had done.

Mr. Stickney said he was anxious to have the exhibition of our fruit at the meeting of the Pomological Society, one that would be creditable to our society and to the state. He did not think it would be advisable, in the short time remaining, and in the state of our funds, to exhibit a large number of varieties, or to have many of a kind, but thought it was important to show all of our best varieties and to have all the specimens choice ones. He had collected and made arrangements by which he could get some very choice fruit, grapes, etc., but thought we could secure a fine addition to our show from the fruit now on exhibition at the fair. The time was very short, and if anything was done, it would be necessary to make the selections and to forward at once.

Mr. Pilgrim, superintendent of the horticultural department, stated that there was a very large and fine display of fruit at the fair, and he had no doubt but that the exhibitors of it would be willing to contribute all that might be needed for this purpose, and that it might be taken at once and have a good show left, but that any of it could be taken away and packed so as to ship on Friday without interfering with our exhibition at all.

Mr. Plumb moved that the exhibitors of fruit at the State Fair be requested to donate such specimens in their exhibits as were needed to make a creditable display of the fruit products of Wisconsin at the Pomological Society meeting, at Rochester. Which was carried.

President Smith stated that the Board of Regents of the University had arranged to hold a series of conventions in different parts of the state the coming fall and winter, and had

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requested that the State Horticultural Society should take part in them. He thought the society ought to take some action on this matter.

Mr. Plumb offered a resolution, that the president be authorized to appoint one or more members of the society to represent it at these meetings.

An amendment to this was presented by Mr. Wood, appointing President Smith the representative for the society, and also authorizing him to provide for such further representation as he might deem necessary. Carried.

Mr. Stickney, in calling attention to the resolutions passed by the society at its summer meeting, in which it declined to take part officially in, or to pay any portion of the premiums awarded in the horticultural department of the coming State Fair, said that he regretted that such action had been taken; that he should have opposed it, had he been present, not because he thought it just or right that the society should be called upon to pay the premiums, but on the ground that, as we had made an agreement to that effect, we ought to carry it out. This action of the society had placed him in rather an unpleasant position; as the representative of the society, he had made this agreement with the Agricultural Society, and it had afterwards been approved by us, and now the Agricultural Society can claim that we have gone back on the agreement with them. He was aware that it was a very foolish bargain to make, but having made it, he thought we ought to abide by it, even if we did not relish it, and profit by the experience. He therefore hoped that the resolutions would be rescinded.

A motion to rescind was made.

The secretary stated that this agreement was conditioned on the passage of the bill, which was at that time pending in the legislature, granting us an appropriation; the bill was passed, but in a modified form; the $1,000 asked for was cut down to $600; the word "annually" was stricken out, and the appropriation limited to a single year. He had always been opposed to using any of the money for this purpose, as there were other ways in which it could be expended, where it would contribute

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much more to the advancement of the horticultural interest of the state, and which were much more in accord with the purpose for which we asked for the appropriation, and for which it was granted. But there was still another reason why the society were under no obligation to pay any part of the premiums awarded, and which would justify it in refusing to do so. When the agreement was made, it was with the express understanding that the department was to be under the management of the Horticultural Society, and the secretary, in preparing the copy for the premium list of that department, had stated this fact in the usual manner, and also put in certain regulations for its management, which had been duly considered and adopted by the society; these were stricken out by the officers of the Agricultural Society, and means taken to prevent the changes being discovered before the list was printed, thus virtually ignoring all right on the part of the Horticultural Society to control the department. This part of the agreement being disregarded, there could be no obligation resting on us to pay any part of the premiums.

In the discussion that followed, most of the members seemed to think that, having made the agreement, it was best to abide by it, and the motion to rescind was carried by a vote of ten to five.

Mr. Stickney moved that the executive committee be authorized to pay six-tenths of the premiums awarded in the horticultural department. Which was carried.

Society adjourned.

TRANSACTIONS AT THE ANNUAL MEETING.

AGRICULTURAL ROOMS,
MADISON, *February* 3 — 7:30 P. M.

The president called the society to order at 7:30 P. M. He stated that the opening session of our annual meetings are usually of an informal character, devoted mainly to laying out the work to be done, and the free and social interchange of views on horticultural interests in general. Owing to the amount of business to be done, and the shortness of the time the society could

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give to the transaction of its own business, it would be necessary to improve the time, and do what we could at this session.

A motion was made that the president should appoint the usual committee to arrange the order of business, and the other committees required for its proper transaction.

In accordance with this motion, the president appointed:

Committee on Order of Business.— A. G. Tuttle, C. H. Greenman, and N. N. Palmer.

Committee on Resolutions.— J. S. Stickney, Geo. P. Peffer, and J. W. Wood.

Committee on Nomenclature.— J. C. Plumb, George J. Kellogg, and D. T. Pilgrim.

Committee on Premium List.— George J. Kellogg, George P. Peffer, and J. C. Plumb.

Committee on Fruit Exhibited.— A. G. Tuttle, Alfred Smith, and W. Olcott.

Committee of Conference.— J. S. Stickney.

A communication from Mrs. I. H. Williams was read, which called attention to some things in the management of the exhibition, and the manner of judging of the merits of articles exhibited, which lead to much dissatisfaction.

On motion of Mr. Stickney, the communication was referred to the Committee on the Premium List.

President Smith read the report of Brown County Horticultural Society, and stated that the society was in a very flourishing condition; there was more than the usual interest felt in their meetings, as indicated by a larger attendance, and a more general participation in the discussions. They had derived much benefit from the meeting of the State Society in June, and he was satisfied that the interest thus awakened in horticultural subjects, and in exhibitions of fruits and flowers, would be felt for a long time.

SUMMER MEETINGS. — Mr. Stickney inquired as to what part of the fruit and flower exhibits were from other parts of the state.

Pres. Smith replied that a few were from the southern and other parts of the state, but far the greater part were from Green Bay and vicinity.

Mr. Stickney said he had asked this question because he thought that it was not possible to fix upon a time or place when fruits and flowers from all parts of the state could be exhibited to advantage. If in season in the southern portion of the state, it

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would be too early for the northern portion, and if in their prime at the north, it would be so near the close of the season at the south, that they would not bear transportation for such distances. He sent some strawberries to be exhibited at the June meeting, but they were from the last half of his crop, and were so soft that they must have been in a poor condition when put on the tables. We cannot harmonize all parts of the state in holding one general exhibition. He was satisfied from the results that had followed our June meetings in the past that the great work of this society, next to holding an annual meeting for the consideration of horticultural matters, was to aid in holding these summer exhibitions in different parts of the state. We could do more to excite interest in horticultural pursuits; in developing the cultivation of fruits and flowers by these gatherings than in any other way, and he was in favor of expending a certain portion, say one-half, of any appropriation we may receive from the state in aid of such exhibitions. He would recommend giving $50.00 to any local society which would raise this sum or a larger amount to be expended in the same manner as at Green Bay last June.

Mr. Kellogg thought it was a great benefit to get up a local interest by these meetings, but it would so divide our forces to have a number of exhibitions of this kind that much of the present interest in them would be lacking. They come at a season of the year when many of our members could not be long away from home, and the number at even one meeting must necessarily be small, and if we had four or five, he feared the society would not be able to get members to attend all.

Mr. Stickney was satisfied that we should have a better time to all meet at one place, but the greatest good to the greatest number should be the principle by which we should be governed, rather than personal gratification. He thought that eight or ten members could be found to attend, and by arranging it so that two or three meetings could be held the same week, the society could be well represented at all of them.

The citizens of Galesville and Baraboo extended an invitation to the society to hold the summer meeting in their respective towns.

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On motion of Mr. Kellogg, these invitations were referred to the executive committee for consideration.

EARLY DECAY OF FRUIT.— Mr. Peffer, being called upon to give his opinion as to the cause of the early decay of fruit this season, stated that he thought it was largely due to excessive fungoid growth, the seeds of which remained over from last season, and the development of which was greatly favored by the over ripe condition of the fruit, which ripened up prematurely, and the enfeebled condition of the trees. The fruit did not reach its normal growth, ripened up very early, the result, in part, of the hot, dry season, and in part of the mature wood growth of the previous year. With him most of the apples were covered with small, black specks which soon occasioned decay.

Mr. Stickney said that at least three-fourths of the trees were enfeebled by want of foliage the year before; the result of this was that the fruit buds were not fully developed, and were lacking in vitality, which lead to a premature ripening of the fruit. These effects were also intensified by the drought and heat of the season.

Mr. Wood stated that in his section the Fameuse was inferior in size, and had a bitter taste.

Mr. Tuttle said that with him the Fameuse was not bitter, but small and scabby. This he thought was due to the heat and moisture. The Fameuse thrives best in a dry and moderately cool climate. They are usually much better here with us than in any part of the country. In Michigan and New York they are not as large or as fair as with us, and are very apt to be scabby. He usually had Fameuse for some time after our winter meeting, but this year they were gone in December. Thought the cause was excessive heat in the fall. Russets were never better or fairer, and were keeping well as yet.

Pres. Smith thought the best Fameuse he had ever seen were raised in Oconto county.

Mr. Palmer had a very good crop of apples this year, thinks that with one exception it was never better, and they were keeping well.

Mr. Olcott, of Brodhead, was astonished to hear that the fruit

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was inferior, and was not keeping well. His apples were good; the early kinds were very large and fair. His pears had done well. He did not believe that there was any disease of the trees which occasioned the rot, but thought it was the hot weather the past fall. His soil was what is called clayey, and is composed largely of lime and clay.

Mr. Peffer was satisfied that the reason why friends Palmer and Olcott had good apples was because their trees did not suffer the previous year from drought, and had sufficient foliage to mature their fruit buds and wood growth.

Mr. Kellogg had never seen fruit decay so early; his Willow Twigs, and all late keepers, were gone, and as far as he could learn, this was the case all over the state.

GRAPES. — Mr. Greenman was called upon to relate his experience with grapes the past season. He said that the vines all wintered well; had not lost a single vine out of over 2,000. The fruit set nicely, and the prospect was good for the best crop he had ever raised, until they were struck by hail. The grapes were nearly mature in size, and were greatly damaged. Twelve hundred of his vines would have averaged four or five pounds to the vine, he thought, but 2,000 pounds was all he harvested. Before the storm he had put on about 300 paper bags to protect the clusters from the birds, and from rot. The result was very satisfactory on most of the vines, but the best of all on the Janesville; on some, the bags were too close and the bunches rotted off. Instead of using paper bags, he thought that something that would admit the air more freely would be much better.

His Janesvilles had done well. He sold them readily for seven cents a pound, while he only got five cents for his Wordens and Rogers hybrids. The Janesville does the best where the growth is confined to one or two canes. Many cultivators allow it to sucker all it will; this is a mistake, for it lessens its productiveness and diminishes the size of the bunches and fruit.

Information was asked for in relation to the Duchess, Brighton, and Moore's Early, new varieties that have been recommended very highly at the east. It was stated that the first one mentioned had been known at the west under other names for a num-

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ber of years. Some call it the Goodall. Mr. Peffer said there was a large vine of it in Mrs. Curtis's garden at Milwaukee, and that it had been known here for twenty years under the name of White Muscadine.

Mr. Stickney said he was very much pleased with the Brighton at Rochester; he saw a trellis there literally crowded with fruit, and he regarded it as better than the Concord. Moore's Early all through Massachusetts and New York ripens a week earlier than the Concord, and also matures its wood early and is very productive. He regarded the Prentiss, from what he had seen of it, as the most promising of the new varieties.

STATE AID.— Senator Anderson and Representative Lawrence announced that no bill had as yet been introduced asking an appropriation from the state. It had appeared to them best not to introduce one in the early part of the session, and as the time for the annual meeting was so near at hand, they had thought best to defer it, so that the society might take action upon it for itself. The members of the legislature appeared to be favorably disposed toward the society, and would doubtless be willing to grant anything that was reasonable.

Mr. Stickney moved that our representatives be instructed to ask for an annual appropriation of $600; which was carried.

The committee on programme for business reported as follows:

At 9 A. M. of the 4th, president's address, and reading of the secretary's and treasurer's reports; the reports of the committee of observation, and revision of the fruit list.

At 2 P. M., reports of county horticultural societies; 3 P. M., election of officers and other miscellaneous business.

Which report was adopted, and the society adjourned to 9 A. M.

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TUESDAY MORNING SESSION.

The society met at 9 A. M. in the Agricultural Rooms, and President Smith delivered his

ANNUAL ADDRESS.

Gentlemen of the State Horticultural Society:—It has occurred to me that the article in our organization requiring an opening address from the president of the society, should either be stricken out, or else the president should be a man of much more than ordinary ability to prevent his opening addresses from becoming very monotonous. This is peculiarly true of one who has appeared so often in this position as I have done. I will endeavor to be brief and not detain you for any considerable length of time.

The first question that naturally arises upon such an occasion as this, is, how has the year passed with ourselves and our friends? The lives of all of our members, as far as I know, have been spared. It has also been a year of unusual good health throughout nearly all portions of our state. It is said that those who have long been sick, know the full value of health. I sometimes fear that when we are estimating our advantages, we do not estimate this great prize at its full value. Our very healthy *climate* should never be forgotten when we enumerate the advantages of our state. The remarkable change in the business of almost our entire country during the past twelve months, has, I am rejoiced to know, been felt more or less favorably among the members and friends of our society. It is but fair and reasonable to expect that the year now before us, will be one of great and healthy prosperity. I do not mean a year of extravagantly high prices, but one, during which, there will be a steady demand at fairly remunerative prices.

The apple crop of this state last year was a very moderate one. As far as I know, the orchards have made a fair, but not large growth, and have gone into winter in good condition, and with a fair prospect of a good crop next season. The strawberry yield was a fair one, and in the northeastern portion of the state, something more than an average. The Wilson still holds its own as

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the leading market berry, though the Crescent Seedling seems to be developing remarkable power as a strong grower and a great bearer. Whether or not it will supersede the Wilson, remains to be seen. Both raspberries and blackberries were a light crop, and in some portions of the state, almost a failure. This result was due to the dry weather during the fruiting season. The grape crop, perhaps, was not above an average. The Delaware is not only holding its own, but is showing a remarkable adaptation to our Fox river valley. I have seen vines, during the past year, loaded with Delaware grapes to an extent that I have never seen equaled at any other time or place. Some of the Rogers rotted badly. If that should continue to be the case with them, it will be a very serious objection to their cultivation in the Fox river valley. New varieties of grapes, as well as apples and strawberries, are every year brought forward, and pressed upon our attention with all the diligence and pertinacity peculiar to those interested in their sale. It is often the case that some new variety of fruit will produce remarkably well in and about its native place, and yet be comparatively worthless throughout almost the entire country. This fact should make us very careful, as a society, about indorsing any new fruits until we are sure of their value for general cultivation. By making one mistake of this kind, we may do a damage that cannot be easily repaired.

I am more and more convinced every year of the value of our volume to the citizens of our state, and that as a general thing it is looked upon as the highest authority they can get upon the subjects upon which it treats; and hence the necessity of our using the utmost care that nothing shall get into it that shall in any manner mislead its readers or mar its usefulness.

You will recollect that at our last annual meeting a resolution was passed authorizing the president of the society to draw from its funds a sum of money, not to exceed $100, for the purpose of assisting in getting up an exhibition of fruit and flowers at Green Bay during the time of the summer convention. After my return home, I proposed to our local society to draw $50 from the state society funds to assist them, provided they would appropriate a like sum of their own funds, and thus secure a fair list of premi-

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ums for the summer exhibition. The offer was promptly accepted and the appropriation made. Friends went to work with a cheerful good will. The result of the convention and the exhibition, I will leave the members and friends who were present to report upon, except to say that as regards the citizens of Green Bay and vicinity, I do not believe that it would have been possible for our society to have created such an interest in the cause, and such a kindly feeling toward themselves in any other way, as in the manner above indicated. If we succeed in obtaining an appropriation this winter, I would most earnestly recommend that at least a fair share of the funds so obtained be used in assisting local societies in holding summer conventions, and summer exhibitions. If it was known that our society was ready and willing to render a little aid at such times and in such places as were necessary, I believe that such an interest in horticulture and its kindred work might be awakened as has never yet been seen in our state. It might be the better plan to give either the future president or some one else the authority to act in the matter, and to not only render a little pecuniary aid, but do what would be of much more importance, either go himself in company with one or two other members, or if unable to go himself, designate others who shall go and deliver addresses, and in all ways render such assistance as may be in their power.

These recommendations are made with more confidence from witnessing the result of the last summer's experiment in Green Bay. It may be said that this will entail a large amount of work upon some of our members; and that is true, but I suppose that work is our lot here, and always will be, and in doing this we shall at least have the satisfaction of knowing that we are doing something that will make homes more happy and more beautiful in the years to come. But, gentlemen, I promised in the commencement of this address, that it should have at least one good quality, that of brevity; and lest I should despoil it of that one redeeming feature, I will bring these remarks to a close.

One day, many years since, while in New York city, I was walking through that portion of it known as the Five Points. It was before any effort had been made to reform its residents. The

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historical Old Brewery was a center, around which vice, wickedness and crime reigned supreme. If there was one spot upon the American continent where the doctrine of total depravity could have been mathematically demonstrated, it was here. While in the worst portion of the place, I saw standing in a window a broken vase with a few puny, faded flowers. They were trying to grow, and in such a place! I could not but stop and look at them, and think that even here, amid all this moral ruin and desolation all about me, there is still a lingering desire in some hearts, faint though it be, for something better. There is still a feeble wish for something pure, something good and beautiful. I believe it is ever thus. It may be covered up with the love of money, with the hurry and turmoils of our active lives, but still it exists. If we by our labors can awaken it to an active life; if we can excite it to a greater activity where it already exists, there will follow in its train not only a love of the beautiful, but also a love of the good, the pure, and the true. Better and happier homes, more refined men and women, will cluster in and about them, better children will grow up, and as they leave for other scenes and other activities, they will not go without a single sigh or regret, but will ever remember their childhood's home as one of the dearest and most beautiful spots in all the wide, wide world. Then, friends, let us not tire, but work on; and if we can do something to bring about such a desirable result we shall not have worked entirely in vain.

In endorsing the views of the president concerning holding summer exhibitions, Mr. Stickney said that should we obtain the appropriation we had asked for, we should endeavor to accomplish the greatest amount of good possible with it, and he did not think there was any other way in which so much could be done as in aiding these exhibitions. The result at Green Bay was very satisfactory, and could, and ought to be repeated in many other places in the state. He was in favor, if we secured the aid asked for, to devote half of it to this purpose, to be given in sums of fifty dollars each to the six local societies who would raise a like or larger amount to be offered in premiums at June exhibitions.

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The executive committee or president could be authorized to send two or more members of the state society to read papers and take part in the discussions at each of these exhibitions. It might be arranged by fixing the time of these meetings on different days of the week, so that these same members could attend two or three meetings the same week. The details of the exhibition, and the management of it, and the meeting should be left wholly in the hands of the local societies, so as to adapt the time to the season of strawberries and flowers, and to the special products of each locality. Competition should be open to the state, if they choose to come, but special reference should be had to the immediate vicinity. It seemed to him that this plan was feasible and easy of accomplishment. It was practicable to get up in this way an enthusiasm in strawberry culture, in the cultivation of flowers, and in horticultural meetings that would result in great good. When people attend these meetings and see what their neighbors can do, they will be induced to try for themselves, and those already engaged in the cultivation of fruits and flowers will be led to give still more care and attention to it. We are little aware as to the extent to which strawberries and other small fruits are raised in our state, or what quantities are consumed. A large portion of what are used here is now brought from other states, which might be raised at home, if an interest could be awakened and attention was directed to it.

Mr. Stickney was requested to embody his views in a resolution for action, and in compliance he handed in the following:

Resolved, That we will devote one-half of any appropriation we may receive from the state, to be given in six equal sums, to the six local societies who will raise the largest sums — not less than the amounts received from this society — such sums from their treasury and ours to be offered as premiums for a summer exhibition of strawberries, roses, and other fruits, vegetables and flowers of that season. Such premium lists to be *open to the state*, and the details of such exhibition to be under the joint management of the executive committees of the local society and of this society.

Resolved, That, in connection with the six local June exhibitions in which we may take part, it shall be the work of our executive committee, as far as practicable, to arrange for the attendance of two members of our society, at each of these exhibitions, to give essays on some appropriate subjects, and render such other aid and encouragement as they can. And that the railroad

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fare of such delegates, and of such ladies as may be invited to read papers at such meetings, shall be paid from our treasury.

In support of these resolutions, Mr. Plumb said that everyone who had attended our June meetings and had seen their results, was convinced that we ought to continue in this work, and do all we can to aid local societies in different parts of the state in this way. He did not know of any other way in which we could accomplish so much.

Mr. Kellogg said anything we could do to stimulate the raising of small fruits would result in great good, and he would like to see this plan thoroughly tried. It was astonishing what an amount of small fruit was raised and consumed. There were quite a number around Janesville that raised strawberries for market, and they all found ready sale for all that they had and could have sold many more; they all could not supply the home demand, and many were brought in from abroad. One firm there had retailed over three hundred bushels the past season. It seemed as though the more were raised, the more there were to eat them and the greater the demand.

The resolution passed without dissent.

REPORT OF THE SECRETARY.

As the time that can be given to the transaction of business at this meeting is very limited, I will not burden you with a lengthy report, but will proceed at once to speak of what has been done by the society during the year, and of a few things which I think will tend to promote greater efficiency in carrying on our work in the future.

You are, doubtless, all aware of the partial success of our application to the legislature of last winter for pecuniary aid. While it would have been much more satisfactory to have received the amount asked for, and to have it an annual instead of a special provision, still it is very gratifying to have received a portion of it, and all the more so, when the fact is taken into consideration that it is the first dollar the society has ever re-

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ceived from the state, or the first aid, except the provision for the publication of its annual report. As the labors of the society are mainly for the benefit of the public at large, it is but reasonable and just that the state should provide the necessary pecuniary aid to help carry on the work. There is no doubt but that our representatives will, if not at the present session, ere long grant us means for this purpose, especially if they see what has already been granted is used judiciously. The governor, in his message, has given the society and its work a favorable mention, for which our thanks are due.

TRANSACTIONS. — The legislature favored us still farther in adding five hundred to the number of copies of our printed report, and in increasing the number of its pages to three hundred. This will enable us to publish a fuller account of our proceedings, and to give a much larger amount of matter than hitherto. The delay in the time of publication is greatly to be regretted, but was unavoidable, owing mainly to the fact that it was impossible to get the copy for the notes and some of the papers at an early date, so as to get started in advance of other reports, and in part to prior promises, and the pressing demands of business on the state printer.

It would add greatly to the value of our volume could it be printed in the winter, so as to reach the public before the labors of spring commence, but with our annual meeting at this season, and the press of work connected with the legislature, this is impossible. Most of the horticultural societies in neighboring states close their fiscal year in December, and thus secure a much earlier issue of their reports.

SUMMER MEETING. — No member of the society needs to be assured that our summer meeting was both pleasant and a great success, for all must know that it could not be otherwise at the home of our worthy president, and under the management of the wide-awake Brown County Horticultural Society. The welcome and good cheer extended by him and the citizens of Green Bay, both in kindly greetings and in ample provision for the comfort of those in attendance, gave a content and enjoyment that can be poorly expressed in words. We trust that the hearty thanks and

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the kind remembrance of those who enjoyed the hospitality will be some remuneration to our president for the inroads made on the balance sheet of the season's strawberry crop, and to the citizens of Green Bay, who were so untiring in their efforts to make the occasion both pleasant and profitable. Notwithstanding the weather was quite unfavorable, the attendance was large, and the interest well sustained throughout the session. The display of fruits and flowers made by the Brown County Horticultural Society was very fine. (A full report of the proceedings and the exhibition will be found in the fore part of this volume.) We trust that the experience of all present was such as to cause them to remember the occasion with pleasure, and to desire their continuance. The increasing interest manifested in these meetings, for the three seasons they have been held, clearly indicates their value, and should lead the society not only to continue this work, but to put forth greater efforts to make these meetings more pleasant, practical and useful.

RULES AND SCALE OF POINTS FOR JUDGES. — Would it not aid in the management, and contribute to the success of the exhibitions held in connection with these meetings, if we were to adopt rules and give a scale of points for the guidance of those who are selected to judge of the merits of the fruits and flowers thus exhibited? Most of the state, and large local horticultural societies, have adopted rules, and specific points of this kind which must be considered by the judges in making their decision. It seems as though something of this kind would do much to relieve the perplexity and lighten the labors of those acting in this capacity, and would also serve to do away with much of the dissatisfaction now often felt both by the public and by exhibitors. If something definite is fixed upon, some standard laid down, with which the articles are to be compared, the decisions would be much more likely to be correct and to give general satisfaction, than where it is left to personal taste or opinion.

ENTOMOLOGICAL CABINET. — At the summer meeting, a resolution was passed directing the secretary to ascertain the form of a cabinet best adapted for the preservation and exhibition of an entomological collection, and the probable cost of the same, with

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instructions to report. On making inquiries of those familiar with this subject, it became evident that to get a case adapted to our purpose, combining accessibility by the public and security, it would be necessary to deviate from the usual form. Most of the cases made for this purpose are designed for private use and are kept under strict, personal supervision, and those made for public exhibition are constructed with greater reliance on the character of those examining the specimens than we can trust to. These considerations will make it necessary to take extra pains in the form and manner of construction.

The value of such a collection depends largely on the specimens being accessible for examination and study, and yet be secure from the three great foes to which they are exposed: dust, moths and light. One of the largest collections of this kind in the west is now nearly worthless, on account of exposure to the light. To meet these conditions, a cabinet with small drawers, each covered by a pane of glass, will be required. The sizes considered the most suitable are twelve by fourteen, or fourteen by sixteen inches, an inch and a half in depth, so constructed as to be drawn out far enough for examination, but so fixed as not to be removed from the case, except by consent of the person in charge. These drawers can be used in such combinations, both of numbers and form, as may be most desirable, taking into consideration the size of the collection, state of funds, and adaptation to the place where kept.

The character of the work required for a cabinet of this kind will add greatly to its cost, as it, of necessity, will need greater labor and care than ordinary work. The size, material, and style of the work will also vary the cost. As there was no definite provision for the purchase of a case, the executive committee thought it best to defer further action and bring the matter up for consideration here. I had designed to have had a number of shallow boxes prepared, covered with lids and glass, and have them filled with specimens to be placed on exhibition at this meeting, but put up in this manner, there would be great liability of their being injured in carrying and handling, so that by the time the permanent case was ready for them much of their value would

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be gone. Dr. Hoy would have consented to placing part of his collection on exhibition here but for the same reason. In a recent visit to the Doctor, he repeated his kind offer of a year ago — to give us quite a large collection as soon as the proper means were taken for its security. I think it is safe to say there is no one cause which does a tenth the injury to the agricultural and horticultural products of the state as that done by insects alone. It is impossible to estimate the damage they do. Take the injury done by the chinch bug, the cabbage worm, the codling moth, the curculio, the canker worm, tent caterpillars, and a myriad of other foes. The loss occasioned by each one will annually amount to many thousands of dollars, and the damage is increasing from year to year. It is within the memory of nearly every one here, when the chinch bug and the curculio were comparatively unknown in this state; now there is not an acre of wheat raised that is not endangered by the first, and who knows of a plum tree, wild or tame, that for years has borne a handful of fruit unless protected from the little Turk. It is only within the last two or three years that the codling moth has reached portions of the state, but now there is not an orchard, or a tree even, that is not cursed by its presence. Neither is there a subject on which there is such a lack of knowledge, and such general ignorance as on this. It has been a matter of great surprise to see how little is known, even by experienced horticulturists, not only as to the habits of our insect foes and friends, but as to what they are and where they come from. Many are unacquainted with them in their destructive state, and by far the larger part are wholly ignorant of the transformation through which they pass, and it is in this period when most of them can be the best destroyed. Such a collection of specimens as the one proposed, would do much to enlighten the public on these points, and thus enable them to fight their enemies more successfully, and to spare their friends. There really seems to be no way in which we can better promote the horticultural and agricultural interests of the state than by bringing this subject prominently before the public. Were the importance of this subject properly presented, there is good reason to believe that the state authorities would lend their aid in providing a case for such a collection.

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Much good can be done in this direction by giving greater prominence to this subject in our reports. For a number of years a portion of the volume has been given to this purpose, but a yet larger space might, with advantage, be devoted to it. Unfortunately, we have no state entomologist, but those of other states might be induced to aid us in this work. I have had correspondence with a number and have made arrangements by which we can secure mutual benefit, if it should meet your approval. In no branch of natural science are cuts, illustrations, more useful, more necessary, than in this, both to make the insects themselves doing the injury familiar to all, but also the various transformations through which they pass. The engraving of these cuts is attended with considerable expense, and by the plan proposed, we would be able to procure drawings and descriptions of new friends or enemies, to be given in our reports, by getting the cuts engraved. For this purpose a portion of the fund now allowed for the illustration of our volume could be used. Hitherto, but a small percentage of this sum has been expended, but there is no doubt, that in view of the great good which would result, not only to our own state, but to the whole country, the public would approve of the use of a large portion of this fund for such a purpose.

EXHIBITION AT STATE FAIR. — The exhibition in the horticultural department at the State Fair was very large and fine, literally crowding the large hall; but as our superintendent will give us a full report, it will be well to leave the particular description to him, only giving here the number of entries in the various departments, and the amount of premiums awarded. The number of entries of apples by professional cultivators was ninety-nine, by non-professionals, two hundred and seventy-three; pears, professionals, thirteen; non-professionals, twenty-five; plums, professionals, six; non-professionals, fourteen; grapes, professionals, fifty-three; non-professionals, sixty-three; crab apples, professionals, twenty-five; non-professionals, fifty-six; sweepstakes on fruit, professionals, five; non-professionals, three; total entries in fruit by professionals, two hundred and one; by non-professionals, four hundred and thirty-four; seedlings and trees, five. Entries

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for flowers, by professionals, fifty-four; by non-professionals, one hundred and nineteen; special premium for Whitney's No. 20 crab, four. Total entries, eight hundred and seventeen.

The amount of premiums awarded for fruit, to professional cultivators, was $192.50; to non-professionals, $187.50; for flowers, to professionals, $88.50; to non-professionals, $107. Total awards, $575.50.

LIBRARY. — In accordance with instructions from the society, I have written to other societies to obtain sets of their reports for our library. Some of the applications made have not yet been responded to, but from most of them notice has been received that the request would be complied with. The library now contains the following books:

By bequest of Mr. Ford, Geneva Lake, Wis.:
Muck Manual.
Draining for Profit.
Peat and its Uses.
Horticulture Annual.
Rural American, 4 vols., bound in 2.
American Agriculturist, 10 vols., bound in 5.
By donation of the Secretary of Massachusetts Horticultural Society:
Massachusetts State Horticultural Report, 20 vols., paper.
Massachusetts State Board of Agriculture Report, 6 vols.
From Secretary of the Ontario Fruit Growers' Association:
Report Fruit Growers' Association, 6 vols., paper.
From the Secretary of the Ohio State Horticultural Society:
Ohio State Horticultural Report, 10 vols., paper.
From the Secretary of Minnesota Horticultural Society:
Minnesota Horticultural Report, 7 vols.
From the Secretary of Illinois Horticultural Society:
Illinois Horticultural Report, 4 vols.
From the Secretary of Michigan Pomological Society:
Michigan Pomological Report, 8 vols.
From the Secretary of Iowa Horticultural Society:
Iowa Horticultural Report, 1 vol.
From the Secretary of New Hampshire Agricultural Society:
State Agricultural Report, 4 vols.
From the Secretary of Maine Agricultural Society:
State Board of Agriculture Report, 9 vols.
Connecticut Agricultural Report, 2 vols.
New York Agricultural Report, 2 vols.

FRUIT STATISTICS. — The statistics in relation to orchards and their yield, the past season, reported to the secretary of state by the town assessors, were much more complete and satisfactory than in the previous year, but are probably still far from full and accurate. One interesting fact in connection with these statistics, is that there are but two counties in the state that have not reported either orchard or fruit; these are Ashland and Douglas.

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Taylor county returns twenty-six acres in orchard, but makes no report of fruit. It is true that in most of the northern counties the number of trees and the yield reported is small, but this table shows that a commencement has been made, some returns have been received, and this gives good ground to hope that in the not distant future we shall be able, by the adaptation of varieties to local conditions, to greatly develop the capabilities for raising fruit in a large portion, if not all, of the northern part of the state.

The total number of bushels of apples, reported as raised in 1878, is 650,463; number of trees of bearing age, in 1879, is 1,901,424; number of acres devoted to orcharding, 58,481. The following are the statistics reported for the thirty-two counties, which have reported a yield of 2,000 bushels, or over:

COUNTIES.	1878. Bushels of apples.	1879. Trees of bearing age.	1879. Acres in orchard.
Walworth	59,037	123,477	4,247
Rock	49,146	118,272	3,555
Jefferson	41,303	125,364	2,690
Grant	38,160	115,388	2,761
Fond du Lac	37,229	81,106	2,683
Waukesha	34,838	111,852	3,645
Winnebago	33,821	86,896	1,551
Dodge	33,147	88,029	2,912
Dane	29,352	85,005	3,435
Green Lake	29,065	44,510	1,208
Washington	28,058	66,064	2,154
Sheboygan	23,905	60,491	2,023
Kenosha	20,772	65,358	1,833
Green	20,259	50,262	1,511
Racine	18,244	67,005	2,104
Milwaukee	15,037	74,116	2,036
La Fayette	14,897	49,066	1,438
Columbia	14,400	61,404	1,784
Iowa	14,019	41,629	1,043
Calumet	12,533	19,164	697
Vernon	10,237	22,093	907
Crawford	9,919	25,998	760
Sauk	9,517	47,030	1,653
Ozaukee	8,003	29,973	1,199
Outagamie	7,392	15,693	1,146
Manitowoc	6,920	19,709	1,136
Waushara	6,559	13,709	407
Marquette	3,174	9,586	503
Brown	2,918	5,728	240
Monroe	2,516	20,254	585
Richland	2,189	21,729	707
Juneau	2,088	13,149	564

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These returns show the following relative standing:

Walworth County.	1st in yield ..	2d trees bearing age.	1st in No. acres.
Rock	2d .... do	3d ..... do	3d ..... do .....
Jefferson	3d .... do ...	1st ..... do	7th ..... do .....
Grant	4th .... do	4th ... .. do	6th ..... do .....
Fond du Lac	5th .... do	9th ..... do	8th ... . do .....
Waukesha	6th .... do	5th ..... do	2d ..... do .....
Winnebago	7th .... do	7th ..... do	16th ..... do .....
Dodge	8th ... do	6th ..... do	5th ..... do .....
Dane	9th .... do ...	8th ..... do	4th ..... do .....
Green Lake	10th .... do	19th ..... do	19th ..... do .....
Washington	11th .... do	12th ..... do	9th ..... do .....
Sheboygan	12th .... do	15th ..... do	12th ..... do .....
Kenosha	13th .... do	13th ..... do	13th ..... do .....
Green	14th .... do	16th ..... do	17th ..... do .....
Racine	15th .... do	11th ..... do	13th ..... do .....
Milwaukee	16th .... do ...	10th ..... do	11th ... . do .....
La Fayette	17th .... do	17th ..... do	18th ..... do .....
Columbia	18th .... do	14th ..... do	14th ..... do .....
Iowa	19th .... do	19th ..... do	20th ..... do .....
Calumet	20th .... do	27th ..... do	27th ..... do .....
Vernon	21st .... do	23d ..... do	24th ..... do .....
Crawford	22d .... do	22d .. .. do	25th ..... do .....
Sauk	23d .... do	18th ..... do	15th ..... do .....
Ozaukee	24th .... do ...	21st ..... do	20th ..... do .....
Outagame	25th .... do	28th ..... do	21st ..... do .....
Manitowoc	26th .... do	26th ..... do	22d ..... do .....
Waushara	27th .... do	29th ..... do	31st ..... do .....
Marquette	28th .... do	31st ... .. do	30th ..... do .....
Brown	29th ... do	32nd ..... do	32d ..... do .....
Monroe	30th .... do	25th ..... do	28th ..... do .....
Richland	31st .... do	24th ..... do	26th ..... do .....
Juneau	32d .... do	30th ..... do	29th ..... do ....

The number of acres of timber land is given as 9,391,370.

These statistics show a much more general cultivation of fruit, and much larger yield than we had any idea of; could fuller and more complete returns be secured, not only of the apple crop, but of all other kinds of fruit raised in the state, it would add much to our surprise, and also to encouragement in our work. Now but little is known as to what is being accomplished, except each in his own immediate neighborhood. So, too, we are each toiling on, repeating the same experiments, duplicating each other's experience, oftentimes to our sorrow, when by acting in concert, reporting results and comparing experience, we might reach the same end with much less labor and much less loss. Can we not, by individual effort, and through the members of our executive board in each congressional district, secure much fuller returns of what is being done, and accounts of experiments tried, the methods used, and thus secure aid in our work, and stimulate all to greater and better directed efforts.

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I have had considerable correspondence, the past season, with fruit growers in different parts of the state, and have received many interesting communications, some of which I had designed to read or present here, but time will not permit. The most interesting of them will appear in our volume, in connection with the reports from the respective fruit districts. Many of those written to failed to reply, but I trust that the inquiries made will lead them to take careful observations on these points, and will bear fruit in the future.

INSECTS. — One thing particularly noticeable in these letters is the damage done by insects, the past season, and the very rapid spread, and the universal destruction caused by the cabbage worm, the *Pieris Rapæ*. It seems to have reached all parts of the state, and in many places has been so abundant as to nearly ruin the whole cabbage crop. All the usual means for the destruction of insects have been tried, but with little success. Of outward applications, a weak brine, applied while quite warm, has been attended with the best results, but is far from being efficient. Of all the means tried, capture of the butterflies in nets, hand picking the worms, and the sharp eyes and eager appetite of chickens have proved the best. A few exceptions to general destruction in districts infested with them, seem to indicate that early planting on rich soil, and high culture, so as to secure an early development of the head, affords some security against their attacks; also that varieties of cabbage that naturally form their heads early in the season, and are very compact, are injured less than others. The worms seldom bore far into a firm head. They like to work best in the outer leaves, and work in only when these leaves are loosened. In many places there has been an unusual increase in numbers of the parasites preying on this foe, but not enough to save the "sauer kraut."

Reports are given of a foe to the cabbage even more destructive than the *Pieris Rapæ;* one that drills through the firmest head, and that is much more prolific in numbers; but, unless we find some way to annihilate our present enemy, there will be but little left for the new foe.

The ravages of the canker worm and tent caterpillar have been

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fully as great the past season as ever before, not perhaps as severe in localities where they were the most destructive in 1877 and 1878, but in new fields to which they have extended. In some places, where they have worked unchecked for two or three years, the trees have been destroyed or permanently injured. The area infested by them is increasing from year to year, and when they have once secured a foothold, no natural or other means seem to be effectual in wholly exterminating them, though greatly reduced in numbers, even so as to escape notice, there are enough left, so that when a season favorable for their development comes, the destruction attendant upon their first appearance is repeated. Unless some means are taken to check their further spread, they, like the codling moth, will soon be in possession of the whole field.

The codling moth, as usual, was everywhere and very injurious. The only limit to the destruction he occasioned was the capacity of last year's crop of apples to raise more moths.

The currant worm is also on the increase, in fact seems to have made full conquest and come to stay. In many sections, currants, like plums, can only be raised by a continued war on the foe. The causes which have led to the rapid spread of this pest are general ignorance on the part of the public how to destroy them, and indolence and lack of co-operation, united effort on the part of those who are interested. Where there is one man that has the pluck and energy to fight the foe, there are nine that will not do anything, and the willing one is soon discouraged at the prospect of waging the war alone. This is an evil that at no distant day will demand legislation to remedy.

Another point brought out quite prominently in correspondence with those engaged in fruit culture in different parts of the state, which has much of encouragement connected with it, is the generally hopeful spirit, and confidence of ultimate success. Notwithstanding the depredations of insects, difficulties and failures experienced, there is a disposition, in most cases, to persevere, and by accommodating varieties, culture and method to circumstances, to achieve success. Surely with such a record of results as is given in the table above, there is much of promise for the future.

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When we see that well into the northern part of the state the fruit is fairer in form, brighter in color and better in quality, and that varieties thrive there, which are unreliable, uncertain and unfruitful in portions of the state that are regarded as more favorable for fruit culture, we can but think that there is good reason to hope that, at no distant day, we shall be able at least to supply the home demand from our own soil.

Still another rather striking peculiarity is the unanimity in conclusions and results derived from the experience of these individual, home, rather than professional cultivators, both as to varieties, adaptation of soil, location, methods of culture, etc., showing that there are certain well-established and definite principles and laws, which are not only essential to success, but which can be said to ensure it, and which if rightly apprehended and used will make it the rule rather than the exception. We are disposed to believe that by carefully collecting facts, observing conditions and comparing results from the many successful orchards of the state, that we shall be able to correctly apprehend the elements and conditions of success, so as to give a more satisfactory answer to those who are asking what to plant and how to cultivate, than we do at present. With our present experience we have convictions amounting almost to certainty, that in certain conditions of soil, elevation, aspect and culture, such and such varieties will do well, while it is very uncertain or useless to try them in others; and that certain conditions are essential to the best results with this and that variety. Let us hasten to verify these convictions, and thus make the fruits of experience contribute to the success of fruit culture in our state.

STATISTICS. — Mr. Stickney remarked that he was highly gratified, as well as greatly surprised, at this statement of the amount of fruit raised. It far exceeded his expectations, and was certainly very encouraging to learn that so general attention was given to fruit culture, and that it had been attended with such satisfactory results. Such reports would do much to encourage us, and to stimulate to greater efforts. He hoped that we might have fuller and more complete statistics of what is being done in this and in all branches of fruit culture.

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The subject of entomology was one of great importance, and he was convinced of this more and more every year. The rapidity with which our insect foes are increasing is alarming, and little or nothing is being done to check their progress. There should be united action to hold them effectually in check. A little care at first would have prevented the wide spread of the evil, but, having gained a foothold, it will be difficult to entirely exterminate them. But even now, we can by a little labor and care save much of our fruit. Plums and currants, which for a number of seasons have been so effectually destroyed, we can have at a trifling expense compared with the value of the fruit secured. The past season he had killed the curculio on his plum trees, and had gathered a good crop of fruit. He had also picked about three hundred dollars worth of currants, preserved from destruction by the application of white hellebore. The cost of the hellebore used was not over one dollar, and the labor was worth not over three dollars. He was satisfied that it was time and labor well expended, for without it he would not have had a bushel of fruit.

Mr. Plumb said the statistics collected the past year were much more satisfactory than any we have had before, but they are still far from complete. Farmers are generally disinclined to give the desired information, as was clearly brought out in the discussion attendant upon the passage of the resolutions favoring their collection last year. This subject is a very important one, and is one which is attracting much attention in other states, both for the purpose of better directing the efforts of their own citizens to the most profitable branches of production, and to call the attention of people from abroad to the advantages they possess. He was pleased that so much had been accomplished already, but was anxious that still more should be done, and that we should have fuller returns on this and other branches of fruit culture, and he had prepared a resolution in relation to it which he would like to have adopted:

Resolved, That the Wisconsin State Horticultural Society recommends and urges that the present plan for the collection of agricultural and horticultural statistics in our state be more thoroughly enforced and carried out, and that the assessors of the state should be, not only instructed, but especially

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urged, by the secretary of state, to be more faithful in the performance of this portion of their work; and that we wish to commend the faithfulness of the county and town officers, who have in a marked degree been active and efficient in securing full reports from their several districts.

Resolution was carried.

Mr. E. B. Jordan, of Rochester, and Mr. J. M. Underwood, of Crystal Lake, Minn., presented their credentials as delegates from the Minnesota State Horticultural Society, and were, by resolution, made honorary, annual members of the society and invited to participate in the discussions.

REVISION OF FRUIT LIST. — The society now proceeded to the revision of the list of fruit recommended for general cultivation.

Mr. Philips did not like the order in which the apple list, as now given, stands. If the idea was that they are arranged according to their respective hardiness, he could not agree to it; if not so arranged, it was calculated to mislead, as the public would so consider it. Judging by hardiness he should place the Duchess at the head of the list.

Mr. Plumb states that he had just received a letter from Mr. Gideon, of Minnesota, in which he states that the Duchess had been injured by the present winter; the wood had been much colored, but the Wealthy had escaped unharmed.

Mr. Jordan, of Rochester, Minn., said it was impossible at this season of the year to judge correctly as to the amount of injury received. In some varieties the wood may be considerable discolored by sudden changes and severe weather, yet when spring opened they would rally quickly and come out all right. With them, the Duchess had hitherto stood better in the nursery row than the Wealthy, but on reaching greater age it had colored more than the Wealthy, and it was also true that young stock of the Wealthy had been more tender than that of the Duchess; and it was also true that the Duchess readily recovered from this seeming injury.

Mr. Underwood, of Crystal Lake, Minn., said they had grave fears in the section where he resided as to the effect of the present winter on their trees. No winter since 1873 had been so severe, and none, where the changes had been so extreme and so sudden,

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The mercury had stood as low as —42°. They regarded the Duchess as at the head of the list in hardiness, and the Wealthy next, then the Tetofsky, Haas, Fameuse and Plumb's Cider. In his section the Haas and Plumb's Cider both stood better than the Fameuse; the injury to the Haas and Plumb's Cider was about the same, but the Haas recovered the best.

Mr. B. F. Adams thought the Ben Davis should be added to the list. It had been cultivated for thirty-five years; bears well; is a good, showy apple; and he never saw a better keeper.

Mr. Philips spoke a good word for the Alexander. It was a good market apple, large size and had done well with him.

Motion was made to arrange the apple list according to the season as follows:

Duchess of Oldenburg, Wealthy, Tetofsky, Haas, Fameuse, and Plumb's Cider.

Which motion prevailed.

On motion of Mr. Palmer, Golden Russet was added to the list for general cultivation. He would be in favor of putting it on the first list, for it was growing in favor every year; was a good and regular bearer and the best keeping apple we have. It is seen the last in the markets, even to the time new apples come again.

Mr. Plumb moved to add Price's Sweet and Fall Orange.

Mr. Stickney seconded the motion. Fall Orange, with them, was the most profitable apple they raised. Carried.

Mr. Tuttle thought the Alexander was worthy a place on the list for general cultivation. It was a large fall apple, and one of the best and most showy market apples we have, and he moved that it be put on the list, which was seconded and carried, and the list for general cultivation was amended, and adopted as follows:

Tetofsky, Duchess of Oldenburg, Haas, Plumb's Cider, Fameuse, Walbridge, Red Astrachan, Utter, Westfield Seek-no-Further, Tallman Sweet, St. Lawrence, Willow Twig, Pewaukee, Wealthy, Golden Russet, Price's Sweet, Fall Orange, Alexander.

Mr. Jordan would favor recommending the Wealthy for cultivation in the northern portions of the state. In Minnesota, fully as far north, it stood their winters well; was the hardiest tree

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they had, especially so when grafted on crab roots. It worked well on them, especially on the Hyslop. He thought that thus worked it would be as likely to stand as anything they could get, even of the crab stock, and that we could safely recommend it, at least for trial.

Mr. Plumb said that the Alexander did better at the north, in a cool climate, than in the southern part of the state. It was less affected with the blight. All the Russians are used to a cool climate, and are more or less apt to blight when the season is hot, and showery. He thought the Alexander could be raised with good success in many parts of the north.

GRAPE LIST. — Motion was made to strike the Eumelan from the list.

Mr. Peffer thought it was very unsatisfactory; did well for a few years, but did not hold out.

Mr. Alfred Smith said that for the past five years he had not raised a single bunch that was satisfactory. Stricken out.

Motion was made that the list for general cultivation be as follows:

Concord, Delaware, Worden, Wilder, Agawam, Janesville and Lindley. Carried.

The list for trial was left unchanged, viz.: Israella, Massasoit, Brighton and Champion.

RASPBERRIES. — Mr. Stone moved to add the Turner and Brandywine to the list. He had fruited the Turner and found it productive, of very good quality and very hardy. The Brandywine was also productive, hardy, and the fruit was of good quality and bore shipping well. Most people prefer the flavor of the Turner to the Brandywine, but it was not as good a berry to ship.

Mr. Goss, of Pewaukee, had had very good success with the Brandywine; had raised it for three years and thought the berry was larger and better than the Turner.

The motion to add them was carried, and the motion to recommend the list for general cultivation as amended, viz., Miami, Philadelphia, Doolittle, Turner, Brandywine, and *if protected in winter*, Fastollf and Brinkle's Orange — was carried.

Mr. Kellogg had been much pleased with his trial of the Gregg,

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black, and the Cuthbert, red. The latter he regarded as equal in quality to any red berry we have; would like to have them recommended for trial.

BLACKBERRIES.—Information being called for in regard to the Snyder, Mr. Stone said that he had raised it for six years, and that twice during that time it had been injured by the winter, so that not more than one-third of the canes lived; he considered it productive, the fruit medium in size and of good quality. Two-thirds of the canes were killed near the ground last winter, while the top was perfect.

Mr. Adams said it had escaped injury in the winter the past seven years with him and had borne well.

Mr. Goss had raised it four seasons and was well pleased with it. It had stood the winter unharmed, when raspberries near by had been killed to the ground. Thought it would be hardy on high locations, and in a well drained soil of moderate fertility.

Mr. Stickney had raised the Ancient Briton for ten years; would not recommend it to others, but he would not do without it. He had seen bushes standing on the north side of a house in Waupaca county and also in other places, that had borne three and four quarts of berries to the cane. His experience had been, that the bushes grew too fast and too late, and consequently kill down once in every two years; but he thought that they paid even then.

Mr. Hirschinger had cultivated the wild blackberry for ten years; could get large canes, but no fruit.

Mr. Plumb was of the opinion that it was of little use to cultivate the wild blackberry; like the Indian, it would not bear civilization. All blackberries need winter protection, and summer mulching. For winter protection, plow along near the row, and dig the earth away to the main root, then bend the canes down and cover.

It was decided to pass the subject without recommendation.

Society adjourned till 2 P. M.

FEBRUARY 3—2 P. M.

On assembling in the afternoon the revision of the fruit list was continued.

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STRAWBERRIES.—By unanimous consent, the Wilson alone was recommended for general cultivation.

In considering the list for trial, Mr. Smith called for the experience of the members with Burr's New Pine. With him, it was fine as a family berry, good flavor, but was not adapted for shipping and was not productive. He did not think it was entitled to a place on the list. After a brief discussion Burr's New Pine and Arena were stricken from the list.

Mr. Kellogg moved that Sharpless and Captain Jack be added to the list for trial. With him, they had proved very strong growers, and productive. Motion was carried, and the list for trial was amended so as to read: Charles Downing, Boyden's No. 30, Green Prolific, Kentucky, Prouty's Seedling, Col. Cheney, Crescent Seedling, Sharpless and Captain Jack, and was adopted.

Mr. Adams had experimented with the Great American and was much pleased with it; the plants bore well; the fruit was large and fine. Was very productive and very late, the latest berry we have, and held up its size well through the season.

PEARS.—The pear question was briefly discussed, and resulted in recommending the Flemish Beauty to those who were anxious to raise pears, as the variety most likely to succeed. While the society did not feel like advocating its general cultivation, they would recommend it as the best variety for this purpose of any we have.

The list for trial was left as before, viz: Ananas d'Ete, Early Bergamot, Bartlett, Swan's Orange, Seckel, Winter Nellis and Clapp's Favorite.

PLUMS.—It was moved to strike the Miner off the list. Mr. Stickney had seen some very fine Miner plums on sale at Milwaukee, and was led to try and raise them. He had tried them for twelve years; the trees were good and large, blossomed full, but had failed hitherto to produce a single good specimen. At Galena, with Mr. Scott, it does well; there it is sheltered from the northeast, and is on elevated ground. He knew but of one other instance where the trees bear well, and nine-tenths of all the Miner plums in the market come from these two places. He re-

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garded it as useless to try and raise them, as at best there are very few places where it will be productive.

Mr. Kellogg had fifty fine large trees of it, fifteen years old. The tops of the trees were as large and spreading as apple trees; the orchard stood in a sheltered location, so that the cold spring winds could not kill the blossoms, but he had never gathered over a half bushel of fruit from the whole fifty. He thought it ought not to remain longer on the list, to aid the tree peddlers in imposing on the public.

Mr. Jordan said they had the same experience with it in Minnesota; fine large trees, but no fruit.

The motion to strike from the list prevailed, and the list was amended so as to read: *For trial*, Lombard, Imperial Gage, Magnum Bonum, Yellow Egg, Eldridge, Duane's Purple and De Soto, and was adopted.

Mr. Kellogg recommended the Eldridge as a good grower, and a fine plum. It was named after Mr. Eldridge, of Janesville, who some years since brought it from New York.

Judge Sloan, of Janesville, spoke very highly of it. It was very productive and a very good plum. He would sooner trust planting it than any other kind he knew of.

CHERRIES. — Mr. Plumb said that in many parts of the state cherries were extensively raised, and did well. He would recommend as a list for trial the Early Richmond, the Late Richmond or Kentish, and the English Morello. The Early Richmond, it is true, will not thrive in many locations, especially it is not hardy or productive in the northern part of the state, but here the Late Richmond will take its place and grow as far north as crab stock. Motion was carried.

EVERGREENS. — White Spruce was added to the list for general cultivation, and thus amended, the old list was adopted, viz.: Norway Spruce, White Pine, Arbor Vitæ, Scotch Pine, Balsam and White Spruce.

For ornamental planting the old list was left unchanged.

White Pine was added to the list for timber purposes, and for live fence posts, Norway Spruce was adopted.

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In reply to the suggestion that the Catalpa might be raised successfully in some parts of the state, Mr. Stickney said that Mr. Douglass and Dr. Warder, who were very enthusiastic in regard to this variety of timber, had placed the northern limit at which it would prove sufficiently hardy to make its cultivation successful at 42°, and hence they did not think it was advisable to attempt its general cultivation in Wisconsin, as it would doubtless prove more or less tender there.

TREASURER'S REPORT.—The report of the treasurer was called for and read.

To the Officers of the Wisconsin State Horticultural Society:—Your treasurer wishes to report that the receipts and disbursements of the society for the past year have been as follows:

RECEIPTS.

Feb. 4, 1879	Balance	$43 19
Feb. 4, 1879	By membership	34 00
June 25, 1879	By amount received from state treasurer	150 00
July 25, 1879	By amount received from state treasurer	450 00
July 25, 1879	Received on unclaimed premiums, June exhibition	7 00
Sep. 10, 1879	By balance of appropriation for summer meeting refunded	35 00
		$719 19

DISBURSEMENTS.

Feb. 4, 1879	To voucher 102, postage, express and stationery	$5 25
Feb. 6, 1879	103, money due the secretary for 1878	40 00
Feb. 6, 1879	104, money due the secretary for 1878	25 00
April 7, 1879	105, money due the secretary for 1878	35 00
April 7, 1879	106, printing posters	3 75
April 7, 1879	107, postage	4 00
April 7, 1879	108, stationery and printing	3 10
May 26, 1879	109, printing certificates	3 00
June 27, 1879	110, expenses of P. M. Gideon	4 00
June 27, 1879	To appropriation for summer meeting	100 00
July 27, 1879	To cash paid the secretary for 1879, per resolution	75 00
Aug. 11, 1879	To voucher 111, express charges	3 25
Sep. 8, 1879	112, printing for pomological exhibition	2 50
Sep. 8, 1879	113, postage	10 00
Nov. 25, 1879	To premiums at state fair	172 80
Nov. 26, 1879	To expense of delegate and exhibition at Pomological Society	50 00

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Jan. 10, 1880	To voucher 114, express charges	$2 05
Jan. 10, 1880	115, printing	12 50
Jan. 10, 1880	116, postage	5 00
Feb. 2, 1880	Balance	162 99
		$719 19

Respectfully submitted,

MATT. ANDERSON,
Treasurer.

Referred to Finance Committee for examination.

ELECTION OF OFFICERS.—The president announced that the time set for the election of officers had arrived, and that we would now proceed to ballot for the respective officers, in the usual manner and order. The following persons were elected:

President— J. M. SMITH, of Green Bay.
Vice President— J. C. PLUMB, of Milton.
Recording Secretary — F. W. CASE, of Madison.
Corresponding Secretary — A. L. HATCH, of Ithaca.
Treasurer — Hon. M. ANDERSON, of Cross Plains.

The following persons were elected as Committee of Observation for the respective fruit districts:

1st District — D. T. Pilgrim, of West Granville.
2d " — J. C. Plumb, of Milton.
3d " — George Hill, of Fond du Lac.
4th " — A. L. Hatch, of Ithaca.
5th " — E. W. Daniels, of Aurora.
6th " — C. W. Potter, of Mauston.
7th " — D. Huntley, of Appleton.
8th " — A. B. Balch, of Fremont.
9th " — A. J. Philips, of West Salem.
10th " — G. W. Perry, of Superior.
11th " — J. Landreth, of Manitowoc.
12th " — J. M. Smith, of Green Bay.

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The following persons were appointed members of the Executive Committee in accordance with the act of reorganization:

1st Cong. Dist.— F. S. Lawrence, of Janesville.
2d " " —J. W. Wood, of Baraboo.
3d " " —S. J. Freeborn, of Ithaca.
4th " " —J. S. Stickney, of Wauwatosa.
5th " " —Geo. C. Hill, of Fond du Lac.
6th " " —D. Huntley, of Appleton.
7th " " —Hon. A. A. Arnold, of Galesville.
8th " " —Augustus Cole, of Oconto.

REPORTS OF COMMITTEE OF OBSERVATION — Were read and discussed, in part, at this time and during the session, but they are all given here, and in their order, for convenience of reference.

Report from the

FIRST DISTRICT — D. T. PILGRIM, WEST GRANVILLE.

COUNTIES.— *Kenosha, Racine, Milwaukee, Ozaukee and Washington.* In traveling through portions of the district assigned me for observation, the conviction is forced upon me that the report will not be a flattering one. Our crop of apples has been meager, and their keeping qualities decidedly bad. Much of the fruit was poor and imperfect, and as is always the case in years of scarcity, insects have taken the "lion's share," thereby getting themselves in fine condition to assert their rights another season. What apples we had were largely summer and fall varieties, with here and there a few Russets, Seek-no-Furthers, Tallmans, etc. The winter fruit was turned into fall fruit by the hot summer weather of October. Also the hail storm about the middle of August, combined with the heat of October, hastened decomposition.

This should have been our "cherry year." The trees blossomed full as usual, yet the bloom seemed somewhat feeble and imperfect, probably caused by the previous season's drouth and leaf injury. This feebleness, and unfavorable weather while in bloom, reduced the crop to starvation rations for the birds, and none was left for us. The birds bore their loss philosophically; piecing out very comfortably on raspberries, and in some instances eating a

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few sour currants. Cherry trees have made a fine growth of wood and are well set with fruit buds. We wait with interest to see whether the "off year" will thereby be converted into a fruitful one.

Plums have yielded no fruit worth naming. Pears have done better. Some fine specimens were seen of the following varieties: Bartlett, Clapp's Favorite, Seckel and Flemish Beauty. Both plum and pear trees have made medium and mature growth of wood, and have thus far suffered very little injury this winter. This, with the balance of the winter mild, and a favorable spring, promises fine fruit next season.

Strawberries on new plantations and carefully wintered, were an abundant crop. Older and less protected grounds bloomed feebly and matured a light and poor crop. Severe frosts June 5th and 6th, badly injured the bloom and young fruit, but warm and moist weather following, so fully developed what remained as to almost replace the loss. In some sections of the district the heavy rains destroyed the second picking. The frosts furnished most convincing proof of the advantage of elevated grounds for fruit growing; ten or twenty feet in altitude often showing a difference of one half in the crop saved.

Raspberry canes suffered considerable winter injury, especially those which had made a late fall growth, consequently the crop was not a full one, though fair, and perhaps gaining in price what was lost in quantity. Michigan berries crowded prices down lower than was pleasant for our producers. Yet what was their loss was the consumers gain.

There are but few gooseberries grown, and little market for those few, which seems strange, as there are few nicer relishes than spiced gooseberries, or few fruits that yield a more pleasant tart.

Currants yielded a full crop where the plants had good culture and protection from the currant worm; but more than half of all the plants have been for several years stripped of their foliage, until they have too little vitality to be of further use, and their owners too little courage to plant more. Thus is this cheap, delicious and healthful fruit disappearing, when a few cents worth of

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white hellebore and a few moments of timely application would save it.

Grapes wintered finely, and started out in spring for a bountiful crop; but those June frosts soon changed much of this fine promise to something quite like deep mourning. Here again was illustrated the advantage of elevation, no high ground showing the least frost injury.

One thing quite noticeable throughout the district, is the difficulty of growing young trees, especially apple trees. More young trees are lost from what is known as the "scalded tree," than any other cause. Proper attention is not given to the tree after it is planted. It is not properly protected from the burning rays of the sun. Young trees of the Walbridge variety are recovering from the blight of two years ago, and give much promise for the summer of 1880. One other fact is quite noticeable, that our orchards are not sufficiently protected and sheltered by windbreaks on the north and west sides, to make them as profitable and productive as they might be. I also noticed many orchards that looked old, and were dying out. Seeking the cause, I discovered that in nine cases of ten the bulk of the trees were killed by the amputation of large limbs, which exposed so large a surface to the weather that decay set in, and finally working its way into the heart of the tree, killed it. The time to prune and shape a tree is when it is young.

SECOND DISTRICT — J. C. PLUMB, MILTON.

COUNTIES — *Rock, Walworth, Green, Dane, La Fayette and Iowa.* The past season was the "off year" for our apple crop, which was a very short one, and little of that could be kept through the winter. The dearth of this fruit may be accounted for: first, by the imperfect development of fruit buds the previous season from a deficient foliage; and second, by unfavorable weather at the time of bloom and setting. The Astrachan, Sops of Wine, Duchess and Golden Russet bore the most fruit. The Siberians were almost a total failure from the early frost. Pears and plums were very fruitful; and Early Richmond cherry bore a full crop. Grapes gave a full average crop where wood was

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well ripened the previous year; unripened wood was not saved by the usual winter covering, but rather injured. The strawberry gave us a great yield, and for a long season, having abundant and seasonable rains during fruiting. There was a general exemption from insect and fungoid attacks. The foliage of our fruit trees remained perfect until late, and we have an unusual development of fruit buds, and all the conditions for a great yield of fruit this year. The great and prolonged heat of August and the first half of October, ripened fully the last grape, and over-ripened the apple, so that few are keeping well; but for the same reason the Ben Davis, Pewaukee, Walbridge and other late varieties are of unusual size and perfection.

Among the new fruits worthy of special mention, is the Crescent strawberry, which for vigor, productiveness and fair shipping, is very satisfactory, when upon dry, firm soil, and not too thickly matted in the row, and it evidently will in a measure supplant the Wilson.

The Champion (or Tallman) grape ripened fully a week in advance of any other variety, and was better than the Hartford, which it much resembles in vine and fruit.

The peculiarities of the season may be named as follows:

The very cold term of early May and in June, and the long continued heats of autumn. April 7th, commenced digging trees. May 2d and 6th, ice formed one-eighth to one-fourth of an inch thick, on an open water trough. This was followed by a hot and dry term. June 7th, came the general frost over eastern Wisconsin which cut off many of the early vegetables and first bloom of our strawberries, with much of our apple crop. We had but little fire-blight in Rock county, as our wet spells were generally followed by cool, airy weather.

I crossed the state, east and west, six times last summer during the growing season, and north and south twice, and found that summer blight was uniformly connected with excessive rain-fall followed by great heat, and in rich soils or the stimulus of culture. Eastern Wisconsin had a very dry summer and no blight was the rule, while western Wisconsin had an excess of rain in June, and in connection with their rich soils, the trees were badly blighted

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except upon the lean soils and airy hill tops. These extended observations confirm my previous theory of this affection as being a disease of the circulation, and within the control of the grower, by his location and culture.

THIRD DISTRICT — GEORGE C. HILL, ROSENDALE.

COUNTIES. — *Jefferson, Dodge, Columbia and Fond du Lac.* The soil of this section is mostly prairie and oak openings, with some timber. Is free from sand and generally is well underdrained, naturally. Nearly all of the old orchards, planted twenty-five years ago, present a decaying appearance. The varieties that have stood the best, are the Tart Bough, Westfield Seek-no-Further, Fameuse, Golden Russet and Talman Sweet. Of those planted since, the Duchess is entirely satisfactory, the Red Astrachan nearly so. The Tart Bough, largely planted in this section twenty-eight years ago, are now almost all in healthy condition, having born, heavy crops of fruit every alternate season for twenty years. The fruit is all that could be desired for an early sauce apple. The Lowell, though not entirely hardy, has more than repaid those who have planted it.

There is no disposition in this county to plant new orchards for commercial purposes, on account of our markets being supplied with fine fruit from Michigan. The most successful apple and pear orchards are now seeded down to clover. There are a good many Flemish Beauty pear trees in this section, and judging from the quantity of fruit in the market the past season, it is estimated that there were from one hundred to two hundred bushels of pears grown in this county.

The Wilson strawberry is largely and successfully cultivated in the vicinity of Fond du Lac, Ripon and other cities.

There is, in the vicinity of Ripon, between four and five acres of the Ancient Briton blackberry in cultivation. Woodruff & Son have three-fourths of an acre, from which they marketed ninety bushels of berries the past season.

There are a number of successful grape growers in this county. I have cultivated the Hartford Prolific, Concord, Delaware, and several of the Rogers for the past twelve years, and have had an

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abundance of fruit ten years out of the twelve. There is no fruit equally as good, that can be produced as easily as the grape. We have protected our currant bushes from the ravages of the currant worm for the past three years with Paris green, while nearly all the farmers' currant bushes have been destroyed. The few who cultivate the raspberry are amply repaid with an abundance of fruit.

As far as my observation has gone, the farmers of this section of the state are generally neglectful of horticulture. With our splendid farms, beautiful and commodious buildings, and intelligent cultivators, this one thing we lack. May the good influences of the Wisconsin State Horticultural Society be felt far and wide over our state, until this fair domain shall not only bud and blossom as the rose, but until every man shall sit under his own vine, and together with his family, enjoy the fruits, flowers and trees which his own hands have planted and trained.

NOTES ON THE PEAR ORCHARD OF C. L. HOYT, ROSENDALE, FOND DU LAC COUNTY.—The land is prairie openings, gently sloping toward the north; house about ten rods southwest of the plot. On the west, a grove of shade trees with an orchard beyond; on the east, a lane and apple orchard. No shelter on the north, except a thin row of shade trees. The soil is a rich, light, clay loam, of dark color, nearly a foot in depth, resting on a dark, yellow clay sub-soil — an excellent soil for the purposes of general agriculture.

Whole number of trees in orchard plot, thirty. These are set twenty feet apart each way. Twenty trees were set out in the spring of 1862, of the following varieties: Flemish Beauty, Vergalieu, Dearborn's Seedling, Tyson, Onondaga, Vicar of Winkfield, Seckel and Bartlett. The cold weather of January, 1864, killed the Seckel and Bartlett immediately; also a part of the Vicar of Winkfield and Dearborn's Seedling, leaving the others much damaged. The Flemish Beauty and Vergalieu stood, and have borne good crops of pears. One Dearborn's Seedling has also lived and borne large crops. It has lost most of its branches on the north side. The Onondaga grew up to bearing size, apparently as hardy as any, when it suddenly killed down with

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blight. The Vicar of Winkfield bore two or three years and died of decay. The Flemish Beauty has endured throughout, bearing good crops of pears, excellent in flavor and mostly of good quality; but some years a portion of them were knotty. One tree is twenty-two feet in height, others eighteen feet. The Dearborn's Seedlings are the fairest and best pears we have, *taken all through*. Though small in size, they are excellent in quality. The Vergalieus bear good crops, but the fruit is not rich in flavor. The Tyson has not borne till recently; a few choice pears, size nearly that of the Flemish Beauty, ripe late in August.

In 1865 a few Pound trees were set, two of which lived to commence bearing a few good pears, but the wood was unsound and they blew down and broke off.

Increased the number of trees to thirty in 1870, filling out the plot, setting Flemish Beauty, Vergalieu, Lawrence and Osborn's Summer. The two latter varieties killed out in the winter of 1872–3. Have always put gravel under the trees in setting. Since the latter date, have kept the plot filled with seedlings, raised from seeds of Flemish Beauty. Some of these latter are grafted with Flemish Beauty, Pound, Vergalieu and Dearborn's Seedling. These appear at present to be doing well. Have none of them in bearing as yet. Would like to get a good winter pear that would stand, grafted on Flemish Beauty seedling stock.

Some Flemish Beauties as well as other varieties have been lost by blight. Have sustained much damage from stock, the orchard being contiguous to the front gate and to a stock lane. Think the results would have been much better but for this cause. None of the trees are sound at the heart. The Vergalieus appear to be doing as well as the Flemish Beauties. Much trouble has been caused by trees splitting down or branches splitting off during high winds.

The orchard has been generally kept cultivated with hoed crops, until within three years, when it was seeded with clover. The trees have been kept mulched a part of the time. Have concluded to stop the practice of cultivation, and keep the orchard in clover, and mulched. The trees appear to suffer much from injuries to branches or roots received in cultivation, or from con-

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tact with horned cattle. Have generally sold from two or three to ten or twelve bushels of pears each year, according to the nature of the season, at prices ranging from two to three dollars per bushel. The family is large, for which a fair supply of this fruit has generally been furnished for eating and canning; besides which a number of hired persons usually help themselves liberally.

We think the pear orchard has paid in comfort afforded the family, while the sales have amounted to enough to cover the expenses in cash paid out.

FOURTH DISTRICT — A. L. HATCH, ITHACA.

COUNTIES.— *Richland, Sauk, Vernon and Crawford.*— 1.— *Fruit shown at county fairs*, 1879.— *Richland.*—Apples, fifty varieties; crab-apples, fifteen varieties; grapes, fifteen varieties; plums, two varieties; canned fruits, twenty-five kinds. *Sauk.*— Apples, one hundred and thirty-nine varieties; crab-apples, twenty varieties; grapes, twenty-three varieties.

2.— *List of named fruits grown in district*, 1879.— APPLES.— Tetofsky, Duchess, Red Astrachan, White Astrachan, Fourth of July, Sops of Wine, Sour Bough, Early Joe, Mason's Sweet, Early Harvest, Chenango Strawberry, Fall Wine, Autumn Strawberry, Fall Stripe, Early Red, Summer Queen, Autumn Swaar, Keswick Codlin, Alexander, Lowell, St. Lawrence, Fall Orange, Ramsdell Sweet, Bradwell Sweet, Well's Sweet, Bailey Sweet, Sweet Pear, Sweet Wine, Talman Sweet, Weaver Sweet, Northern Sweet, Sweet Russet, Fameuse, Haas, Utters, Stark, Grime's Golden, Pewaukee, Rawle's Janette, Willow, Limber Twig, Dumelow, Esopus Spitzenberg, Fall Spitzenberg, Dutch Greening, Flower of Genesee, Pound Sweet, Twenty Ounce Pippin, Bell Pippin, Nickajack, Roman Stem, Green Everlasting, Herfordshire Pearmain, Winter Pearmain, White Winter Pearmain, Small Rambo, Canada Black, Canada Peach, English Golden Russet, American Russet, Kellogg Russet, Perry Russet, Roxbury Russet, Colvert, Pomme-gris, Fallowalter, Moscow, Orange Winter, Ukraine, Winter Pear (Russian), Green Cut, Red Duck, Wealthy, Plumb's Cider, McMahan's White, McMahan's Bloom, Fall Pippin, Walbridge, Ben Davis, Northern Spy.

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CRAB-APPLES.— Sweet Russet, Whitney's No. 20, Brier's Sweet, Sylvan Sweet, Telfair Sweet, Golden Sweet, Transcendent, Hislop, Montreal Beauty, Golden Beauty, Peach Crab, White Arctic, General Grant, Nutall, Webb, Novelty, Spitzenberg, Palmer's Seedling, Felch's No. 11, Blushing Maid.

GRAPES.— Concord, Worden, Janesville, Hartford, Crevelling, Lady, Catawba, Isabella, Clinton, Blackhawk, Iona, Delaware, Roger's Hybrids, Nos. 3, 4, 9, 15, 19, 22, 44.

STRAWBERRIES.— Wilson, Green Prolific, Captain Jack, Prouty, Ida, French Seedling, Lenning's White, Great American, Forest Rose, President Lincoln, Charles Downing, Colonel Cheney, Kentucky, Duchess, Russell, Colfax, Arena.

RASPBERRIES.— Doolittle, Davison's, Purple Cane, Cincinnati, Clarke, Turner, Philadelphia, Mammoth Cluster, Miami, Ganargua, Golden Cap.

BLACKBERRIES.— Kittatinny.

GOOSEBERRIES.— Houghton, Downing.

CURRANTS.— White Dutch, White Grape, Cherry, Versailles, Red Dutch, Black Naples, Black English.

CHERRIES.— Early Richmond.

PLUMS.— De Soto, Miner.

PEARS.— Flemish Beauty.

WILD FRUITS AND NUTS.— Red Raspberries, Black Raspberries, Strawberries, Gooseberries, Black Currants, Serviceberries, Blueberries, Whortleberries, Grapes, Crab-apples, Thorn-apples, Choke Cherries, Black Cherries, Red Cherries, Plums in variety, High-bush Cranberries, Blackberries, Hazelnuts, Hickorynuts, Butternuts, Black Walnuts.

3. — INSECTS —*New York weevil* (ithycerus novaboracensis). Plenty of this beetle on young apple trees on new ground and near second-growth timber land.

Canker worms, very numerous and destructive throughout the district in May or June. Disappeared about last of June or first of July. Found the female moth of the autumn canker worm on trees last fall, so we may expect more of them next season.

Codling moths, abundant as usual.

Plum curculios, on hand as before. The only good they did

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us, was to let us know that our De Soto plums are not proof against their stings.

Flat-headed apple borer, attack trees almost anywhere on trunks or limbs, on wounds or scars in the bark or in sound places.

Tent caterpillars, enough for all practical purposes.

Aphis or plant lice, very plenty and annoying during hot weather.

Grape-gall louse (phylloxera), we found on Janesville and Roger's Hybrid vines in vineyard. Along Wisconsin Valley from Richland City to Orion, we last summer saw wild vines literally loaded down with leaf galls. It is perfectly certain that the phylloxera is a native here, and sooner or later we must meet them in our vineyards. As observed last season, we found the root form of the louse where none of the leaf form appear.

Cabbage-worms, destroyed the cabbages very generally.

4. — SEASON OF 1879. — Trees and vines came out of winter quarters with very little injury last spring. A severe spring frost cut off the general crop of apples and crabs, especially in the valleys, but still there was an usually large variety of kinds fruited in the district, but the crop was moderate in quantity. After the disappearance of the canker worms, trees put on good foliage and went into winter with well matured growth. A severe drouth prevailed during the latter part of summer, and apples were over ripened and, as a consequence, kept very poorly; most all kinds decayed rapidly. Grapes were an unusually good crop and were abundant, at low prices, in our home markets. The weather was so peculiarly dry and hot during the ripening of strawberries and raspberries, that the juices of the fruit seemed to be seriously injured for canning purposes, and the loss of fruit after canning was quite general. This is a serious inconvenience to country people, as the preservation of fruit in this way has become quite general, and is almost essential to rural epicures.

5. — NEW VARIETIES. — Of those fruited last season, the following deserve mention:

McMahan's White Apple — Specimens grown in the valley were sent to Mr. Stickney to show at the State Fair. We know of no hardier apple tree than this.

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Wealthy Apple — A very beautiful apple, handsome tree.

Orange Winter — A Sauk county seedling; a handsome, good tree.

Russian Apples, of several sorts, including Ukraine, Red Duck, Moscow and Winter Pear.

Worden Grape — This is the Concord improved and in no wise inferior to it. Fruit has not cracked the two seasons we have fruited it, as the Concord does.

Crescent Seedling Strawberry — This self-cultivating variety did not give us such immense quantities of plants as we expected — the *Ida* beat it three to one in that particular.

Ganargua Raspberry — Very large, productive and abominably poor.

6. — FIRE BLIGHT — About the usual amount appeared last season; does not seem to decrease any.

OBSERVATIONS IN FOURTH DISTRICT — G. W. PUTNAM, ASH RIDGE.

In presenting some facts and observations in regard to fruit culture in this section of the state, it may be proper to give a brief outline of that portion lying between and contiguous to the Mississippi and Wisconsin rivers, embracing the counties of Crawford, Richland and Vernon, which is also crossed by several streams running south and emptying into the Wisconsin. The general features of the three counties are very similar. The surface of this section is cut up or broken into a succession of valleys and ridges. The ridges are elevated from three to five hundred feet above the valley of the Wisconsin. The surface, perhaps, presents the most broken appearance of any portion of like extent in the state, and thus gives a great variety of soil and situation. The soil in the valleys is generally sand, or sandy loam, and on the ridges, clay or clay loam. A large portion of the surface was originally covered with a heavy growth of hard-wood timber. Settlements were generally first made in the valleys. Many of the early emigrants were from Ohio and Indiana, and many of the first trees planted were choice varieties from those states; in fact nearly all the trees planted in this section, previous to 1865, were grown outside of Wisconsin. And it is a fact, that a very few

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trees planted previous to the above date are now alive. There is an orchard which is an exception about one mile from me, planted on the top of the ridge; it has no protection from wind in any direction; the trees are Wisconsin grown, was in bearing in 1865, and not more than one or two trees have died since, and although the farm has changed hands twice, and has not had extra care, the trees are healthy and productive.

Fruit culture is comparatively in its infancy in this section yet, but I think it is safe to say that certain principles have already been established which it will be safe for all to follow:

First. We have learned that it is useless to try to grow any of the standard varieties in the low valleys, on sandy soil.

Second. If you expect to have hardy, healthy orchards, plant only trees grown in the same latitude.

Third. Plant as high on the ridge as possible, and the more clay in the soil, the better.

Fourth. If obliged to plant in the valleys, plant only of the Siberian varieties.

VARIETIES.—The experience of the last fifteen years has taught the people of this section, that the list of standard apples that can be successfully grown here is extremely small. There are so many localities around their houses, where the farmers desire to grow fruit, and where it is impossible for standard apples to succeed, and also, from the well known early bearing and great productiveness of the Siberian family of trees, that they are now being very largely planted, not in the valleys alone, but also upon the ridges. Indeed, I think that fully two-fifths of all the fruit trees planted in the section I have named are of the Siberian variety, and as new and improved varieties are being introduced, I think this valuable family of fruit is increasing in popular favor. The introduction of the Transcendent and Hyslop into general culture was a great boon to the people of the northwest. The well earned popularity of these varieties has stimulated propagators of fruit to bring out a vast number of new seedlings of this family, from which valuable varieties of fruit may be selected, in quality and long keeping properties rivaling some of our best old hardy, standard apples. Some are of good quality as dessert

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apples, and nearly all may be regarded as first class cooking apples, varying in size from the old, well known Siberian, to medium sized apples, and with trees hardy enough to be grown in almost any location that is susceptible of general cultivation. The general planting of these improved varieties is adding very largely to the success of fruit growing in this section.

The Transcendent still takes the lead, as Wisconsin seems to be peculiarly adapted to its growth; the rapid growth of the tree, extreme hardiness, early fruiting, great productiveness and good cooking quality of the fruit, will long keep it at the head of the list of Siberians; in fact, in this section, it stands at the extreme head of all fruit trees. The Hyslop seems to hold the second position, although there are other new and valuable varieties that are fast coming to the front. The cultivation and improvement of the Siberian family of fruit is destined to hold a very prominent position in the fruit culture of the northwestern states for a long time to come, adding very much to its home comforts.

We are getting so long a list of new Siberians that some measures ought to be taken to shorten it. I would suggest the establishment of an experimental nursery or orchard under the control of the State Horticultural Society, where all new varieties, whether seedling apples or Siberians, should be grown for a term of years until their relative value could be determined, as to hardiness, quality and productiveness, and only those be recommended which possess real merit, superior or equal to old established varieties. A vast amount of money might thus be saved to tree planters and the tree business be simplified.

By reference to our sale books for the last two years, the following appear to be the leading standard varieties, in the order named: Duchess of Oldenburg, Tetofsky, Haas, Fameuse, Walbridge, Ben Davis, Utter's Red, Red Astrachan, Talman Sweet, Plumb's Cider. The proportion of each variety is about as follows: Duchess, 14; Tetofsky, 13; Haas, 12; Fameuse, 11½; Walbridge, 9; Ben Davis, 8; Utter's Red, 5; Red Astrachan, 5; Talman Sweet, 3; Plumb's Cider, 3; proportion, as above, of Transcendent, 21; Hyslop, 11.

YIELD.—The yield of standard apples in this section, the past

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season, was not up to an average. In this immediate locality, it was almost an entire failure. I attribute this largely to the work of canker worms in 1878. A very large crop of Transcendents all through this section last year. Hyslop, medium crop. I have no data at hand by which I can determine the amount of apples grown last year.

As far as my experience determines, the most productive standard varieties are as follows, in the order named: Duchess, Fameuse, Plumb's Cider, Utter, Talman Sweet, Red Astrachan. As I have intimated, our orchards are nearly all young, and the above estimate is for young trees; old, well established orchards might show a different result.

HARDINESS.— I consider the following, in order named, the hardiest, viz: Duchess, Tetofsky, Walbridge, Talman Sweet, Haas, Utter, Fameuse, Red Astrachan, Plumb's Cider and Ben Davis. The Tetofsky is a comparatively new variety, promises well, but has not been grown long enough here to prove its value yet. The Walbridge appears very hardy, makes a fine nursery and orchard tree, but as yet, we know nothing here in regard to its productiveness or quality of fruit. The Duchess, Fameuse or Utter will pay for themselves before the Walbridge comes into bearing, but it may pay with age. Wealthy is a fine, promising young tree, but we have not tested it long enough to recommend it. Pewaukee and Clark's Orange, although once highly recommended, are worthless for this section, as they will not stand the winter.

SOIL.— The best soil for all varieties of apple trees is a pretty stiff clay, where such timber as white oak predominates. But trees will do reasonably well on any clay loam that has proper drainage; and all soils must have that.

ELEVATION.— As a general proposition, it does not matter how high the land is, if the soil is of the proper quality. If the land is not level, an eastern exposure is preferable. The advantage of high location is free circulation of air, giving a more equitable temperature, and it is also less liable to be injured by late spring frosts. Although it is contrary to my earlier convictions and advice, I now think that those orchards which have no wind break

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or other protection, only such as fruit trees afford each other, are more healthy and productive than those which have ample protection from the wind.

FIRE BLIGHT.— Fire blight, so called, prevails most extensively in the valleys on sandy soil, in very warm weather in June, following a rain, when vegetation is making rapid growth. When occurring on the ridges, it has generally been on land that has been given extra culture or profusely manured, thus rapidly developing growth of wood. It has not yet appeared on our ground, so that we have not had an opportunity to minutely study its workings. The varieties that are most subject to its effects, are most of the Siberian family, and some of our more hardy American varieties. As far as I have observed, I have never seen any blight on any of the Russian varieties. One of the greater obstacles in the way of successfully growing Siberians on low land is the prevalence and destructive effects of the fire blight. Whoever can determine the cause, and find a remedy for this disease, will deserve to be lastingly remembered by the fruit growers of Wisconsin.

CANKER WORMS.— The canker worm was very bad in this vicinity during the early part of the summer of 1878. On many varieties, and especially on transplanted trees, the first crop of leaves was nearly all destroyed. Standard American varieties seemed to suffer most. The foliage on the Russian and Siberian varieties, being heavier and more vigorous in growth, seemed to withstand the depredations of the worm better. On the approach of dry, hot weather about the 20th of June, the worms all disappeared in a few days, and trees put out a new growth of leaves and made a very fair growth during the season. The young fruit was badly injured by the worms, and what was not entirely destroyed was so badly injured that it was nearly worthless. It was so late in the season when a healthy growth commenced, that fruit buds did not properly mature in the season of 1878, and hence the principal cause of failure of fruit here in 1879. Canker worms were not injurious here the past season.

CODLING MOTHS.— As yet very few codling moths have made their appearance in this vicinity. An occasional wormy apple

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admonishes us that the time will come here when we shall have to use means to destroy the codling moth.

CATERPILLARS.— Tent caterpillars are almost unknown here. I have never seen any on our grounds. I shall observe my trees very closely and destroy the first and all indications of any, as I well know their destructive habits when once established in an orchard.

Fruit trees have made a healthy, well ripened growth of wood here the past season, and as yet, we have not had any weather severe enough to injure fruit buds; hence we now expect a good crop of fruit the coming season, if circumstances continue favorable.

Although there are many unfavorable features in this country, to successful fruit culture on a large scale, yet there are other favorable circumstances, and if we make good use of what we have learned by experience during the last fifteen or twenty years, the time is not very far distant, when we of western Wisconsin shall be able to supply our own homes with wholesome fruit, which will contribute much toward making our families contented and happy. I am of the opinion, that, if we are judicious in the selection of varieties, intelligent in planting and culture, and watchful in preventing injury from insects, we shall yet be able to produce merchantable fruit, to supply those who are not as favorably situated as we are.

FIFTH DISTRICT — E. W. DANIELS, AURORAVILLE.

COUNTIES.— *Green Lake, Winnebago, Waushara and Marquette.* The geography and soil of this district has been already reported. I have been in all the counties but Marquette, during the past year, and will, as far as possible, mention any points that are new.

Marquette county does very little in fruit culture, and likewise the western part of Waushara, excepting the crab or Russian varieties; but Green Lake, Winnebago and the eastern part of Waushara are probably as good as any in the state. Last year Winnebago did not raise half enough fruit for its own consumption, and was supplied with hundreds of bushels from our town of Aurora. The past year was not the regular bearing year for

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apples, but as they did not fruit heavily the previous year on account of a spring frost, I thought they would make it up the past year, but it did not so prove. Green Lake county raised enough of summer and fall varieties to supply its own wants, but no native or home grown apples were in their markets after the middle of December. This plainly shows the necessity for a better class of winter apples in this county.

The past autumn has been the worst for keeping apples ever known in Wisconsin. The Perry Russet, for the first time in four or five years, produced a heavy crop, was our most plentiful fruit, and nearly all that the shop keepers would look at in the fall and early winter. On the 10th of October I took to market, in the cities of Appleton and Seymour, Outagamie county, Fameuse, Sweet Pear, Perry Russet and some other varieties, but could sell none in the shops except the Perry Russet. Of the Sweet Pear and Fameuse, though freshly picked, fully one-third melted down during the two days transit to that market, when the thermometer stood at 80° or 90°.

I think, from past seasons and present winter, if we have no more severe weather this month, we shall be very likely to have a heavy crop of apples the coming year. The trees are set full with fruit buds.

RASPBERRIES AND BLACKBERRIES.—Mammoth Cluster is cultivated for home use and transportation; Philadelphia, for home use. If birds trouble them, mix yellow with the black and the birds think they are unripe. I have had no trouble with birds eating berries for ten years past, except cherries. We have in this section been learning the value of the Ancient Briton blackberries, since we have known how to protect against winter killing. Mr. F. Livermore first introduced them here, and claimed that they would not winter-kill, but of late he admits that they will, without protection. Mr. Johnson, of Berlin, covers them in the winter. As they cannot be bent in the stalk above ground, without breaking, he digs under the roots with a hoe or garden trowel, and bends in the roots; but a quicker way is to use a potato fork, and run it carefully under the crown of the roots, and loosen the earth until the plant will bend down easily, and then, cutting back the main

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shoot and most of the branches, they can be readily covered with earth from three to six inches in depth. They will yield, when protected in this way, even more than Smith's strawberry crop.

We keep mostly in the old track in strawberry culture, but intend to set the Crescent Seedling next spring.

Allow me to add a few words about varieties of apples. I do not agree with Tuttle & Co. in regard to the Fameuse. There are many more profitable apples for us; among which are Duchess, Fall Orange, Talman Sweet and Pewaukee. I think we will try a few dozen new, nice varieties from the thousand and one brought from Russia and propagated at Washington. They have already been extensively introduced in the different states, and I think it our duty to test them here. I have fully tested two seedlings, from six to twelve years, and found them lacking in no desirable quality. The Aurora Belle is up to the Duchess in hardiness, and the Northwestern Greening is about equal to it. The seedling I exhibited last winter was said to be identical with the Rhode Island Greening. I showed the apples to dealers in fruit at Watertown, who pronounced them in no way related to that variety, which I expect to prove. I have nine more kinds which I shall graft this winter, and top graft next spring.

We had no cracking in the Perry Russet last year, and little or no blight in apple or pear. Plums did not recover from the effect of the frost in 1878. I hope the little "Turk" (curculio) will be depleted from want of a place to propagate its young for the last two years.

PEARS.— The trees that passed through the winter of '74 and '75 here produced good crops for the last two years. One man in our town had from five to eight barrels of Flemish Beauty the past season.

GRAPES.— People who have so long neglected or ignored grapes as difficult or impossible to raise, have, after seeing and tasting the Janesville, Rogers, Worden, Delaware, etc., been induced to try the hazardous undertaking of getting from two to four roots at two shillings each, and think, if they do not fail, they will launch into deeper water and get a dozen next time. I inquired of a German if he had pruned and covered his grapes. He said

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"yaw," and wished me to see them. I went with him, and found that he had only taken off about one-third as much of his vines as was necessary, and put a few forks of frozen lumps of mulching about the roots, while the new growth was high and dry above the covering. A few of the Germans in this country are very good vine growers.

The sale of nursery stock was better last fall and winter than for years before, as we have had no winter-killing since 1874–5, and I predict that good stock will be in better demand, and bring better prices than in former years.

Our temperature this winter has not been colder than 20° below zero.

SIXTH DISTRICT — C. W. POTTER, MAUSTON.

COUNTIES.— *Adams, Juneau and Monroe.* In going through this district we find almost all kinds of soil, and that the change from one to the other is very sudden. The southern part of Juneau and Monroe counties have a chain of bluffs and ridges covered, in state of nature, by oaks. This timber is very heavy in some parts of the bluffs; while the valleys adjacent are covered with sugar maple, basswood, butternut and sweet walnut. Any of this timbered land is adapted to the growth of apples.

The amount of trees planted the past year has been about twice that of the previous year. Trees planted last spring, that were mulched and cared for when planted, lived and made a good growth. The apple crop was more than the average with other years; but the fruit did not keep well, probably due to the extreme warm weather, from the first to the middle of October. The varieties generally grown in this vicinity are Tetofsky, Duchess, Haas, Saxon, Fameuse, Walbridge, Plumb's Cider, Pewaukee and Talman Sweet. A number of others have stood the test very well.

As to pears, plums and cherries, there has never been many planted. Grapes, currants, gooseberries, raspberries and strawberries seem to be at home with us.

Hon. W. W. Jackson, of Tomah, Monroe county, reports: "The varieties that have proved the most profitable in this vicin-

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ity, are the Duchess, Fameuse, Saxon, Haas, Golden and Perry Russet, Talman Sweet and Red Astrachan. There are others grown here, but the above are about all that are grown successfully." Mr. Jackson estimates the apple crop of Monroe county the last year at two thousand bushels. Of the crab apple there are thousands of bushels; all varieties of them do well here.

J. K. Jewett, of Sparta, Monroe county, reports that "the crop of fruit in the valleys was light, but on the ridges it was better. The fire blight was bad in some localities though not as bad as two years ago."

Rev. D. C. Talbot, of Elroy, Juneau county, reports: "We have nothing to discourage, but rather, on the contrary, to encourage us; of course we have met with some failures, but have been amply repaid for work and real painstaking."

Anderson Clawson, of Summit, Juneau county, reports: "The varieties of apples that have proved to be the most profitable in all respects, are Tetofsky, Duchess, Ben Davis, Golden Russet, Fameuse, Talman Sweet and Red Astrachan."

The Concord grape is perfectly hardy; he has three hundred bearing vines, and they produced about one hundred bushels of grapes the past year; also about two hundred bushels were grown by his neighbors.

Mr. Clawson has some trees of Imperial Gage plums and has exhibited fruit at the Juneau county fair for a number of years, but the trees are failing. He has also the Flemish Beauty pear trees that fruit some. His farm is situated on the high timber lands in the town of Summit.

Judge C. H. Grote, of Mauston, Juneau county, reports that "he has five thousand hills of grapes of different kinds; he likes Delaware and Iona the best of any; they do not bear such heavy crops as some other kinds, but the fruit sells at a better price, makes better wine, and is also better for table use. Mr. Grote's vineyard is situated along the bank of the Lemonweir river, on low land, a sandy knoll between the river and a slough or marsh. There does not seem to be a market for the fruit, and I can see no other way than to make wine, and think it will pay."

William Moore, of Lemonweir, Juneau, county reports the

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apple crop the past season to be a failure, but the young orchards are looking well. The varieties that have proved the best are Tetofsky, Duchess, Walbridge, Haas and Talman Sweet. We had a good crop of wild plums, also of currants and strawberries. Then there is quite an interest in flora and apiary culture; nearly every dooryard, window and verandah is decorated with choice flowering plants. The amount of surplus honey was light the past year, but the bees have plenty for the winter. A great deal has been written and said about wintering bees. I adopted the following plan five years ago, and it has given perfect satisfaction: I put up a staging in my cellar, three feet from the floor; on this staging I lay planks eight inches apart, about the last of November, place the hives on these planks, after taking off the caps and the bottoms, standing them on two planks, leaving an eighth of an inch open space under the hives. I take a kettle of hot coals from the stove to the cellar every day; the warm air circulates through the hives and carries off all dampness from the bees, keeping them warm and dry. What bees die during the winter drop to the floor, and are out of the way.

SEVENTH DISTRICT—D. HUNTLEY, APPLETON.

COUNTIES.—*Outagamie, Shawano and Waupaca.* The past season has been one of the poorest for fruit, especially apples, that we have had for many years. The Duchess and Tetofsky bore partial crops. The cause, tent caterpillar destroying foliage so that fruit buds did not mature or develop, or that is the general opinion. Pear trees were not troubled with worms and bore well, what few are alive. I would recommend the setting of a few each season; just what money one could afford to lose, and then, if a success, call it clear gain. We have had little or no blight, either on pear or apple trees, now, for two or three years, but when it is not one thing it is another, and a full crop is the exception; still many feel like continuing the trial, and some, like giving up in despair. It is poor consolation to know what is the matter when too late to apply the remedy, but it may help us in the future.

The Duchess and Tetofsky appear as hardy as the crabs. The

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latter, the earliest apple we have, and it sells well on that account, but not as good nor as large as the Duchess. For an orchard of one hundred trees, I would set five each of Tetofsky, Red Astrachan, Sops of Wine, Fall Stripe, St. Lawrence, Fall Orange, Plumb's Cider and Seek-no-Further; ten each of Talman Sweet and Golden Russet; twenty each of Duchess and Fameuse; of Crabs, Transcendent, Hyslop, Lake Winter and Whitney's No. 20, to suit one's fancy, and try some others cautiously.

NINTH DISTRICT — A. J. PHILIPS, WEST SALEM.

COUNTIES.— *La Crosse, Trempealeau, Jackson, Buffalo,* and the valleys of the *Chippewa* and *St. Croix.* This report will necessarily be very limited, owing to lack of proper information. The past season was a very productive one in certain varieties, especially the Duchess, which produced last season an abundance of fruit, and created quite a desire with many to set more trees of that variety. Even poor, despised, abused and rejected Ben Davis went to work and bore a good crop of fine fruit, but, as Mr. Tuttle prophesies the first cold winter will clean them all out, I dare not recommend them for general culivation. The Wealthy, even on sandy soil, as far as I know, in this district, is giving general satisfaction, and, as usual, the Fameuse has more friends than any other one variety.

GRAPES.— The Concord still gives the most general satisfaction.

STRAWBERRIES.— The Wilson still leads and was the main berry in the district.

Some very fine Flemish Beauty pears were grown in the district on elevated lands.

PLUMS.— I think the De Soto is most promising, although, by help of a long season, the Miner ripened and surprised many who had never seen any but green fruit. They were the finest plums on exhibition at the La Crosse county fair.

Fruit trees went into winter quarters in very good shape, although, on some varieties, the fruit buds were so much swollen by the warm weather late in fall, that some fear the cold weather of the winter may injure them. After hearing of injury to fruit

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trees in Minnesota during the past winter, I made a hasty examination of young and bearing trees and find their condition very satisfactory; no appearance of injury, except on grafts set last spring. The late growth on some varieties is injured.

Some, as usual, are discouraged, and have mostly given up trying to grow apples; while others still continue to set some of the varieties that are most highly recommended.

TENTH DISTRICT — HON. G. W. PERRY, SUPERIOR.

COUNTIES.— *Douglas, Bayfield and Ashland.* In so far as this screed assumes the character of a report, it will be confined to Douglas county. Progress has surely been made in fruit culture, though whether in *knowledge* of horticulture, is doubtful. The certain progress is noted in increased product, but so many additional trees have come into bearing since my last report, that it may well be doubted whether the increase is to be attributed to improved culture or enlarged opportunities; however, I think that I shall claim an advance in general knowledge in some respects. We have made actual acquaintance with several varieties of injurious insects, hitherto unknown here, and we have learned that several varieties of fruits are unsuitable to this section, and, perhaps, that one or two are well adapted to withstand the inclemencies of this climate.

The only cultivated ground in this county, is a heavy red clay, of great depth, but well charged with lime, and very fertile. The clay is so deep that it cannot be drained, but cultivation changes it to a dark, rich loam, and deep cultivation leaves the tilled portion sufficiently drained for all vegetation except trees. The hardy apples like Duchess, Tetofsky, Fameuse, Haas and Wealthy, seem to thrive on it, and have fruited in the past year, and our hope has begun to assume the garb of confidence. The present winter will no doubt reduce our list of fruiting trees, as it has been very severe, and following a very late, mild autumn. Time will tell. The very severe frost of May 12–14, 1879, did no harm here, as our trees had not then blossomed. But a little later, when Transcendents were in bloom, we observed a singular phenomenon. Great flocks of cherry birds gathered on the trees

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and devoured the blossoms, more greedily and quite as completely as later in the season they carried away the rowan or mountain ash berries. Can any one tell the reason of this singular proceeding? The standard apples and Hyslops were not touched. The Transcendents alone suffered, and so far as I know, no one escaped, and so complete was the destruction, that my two bushel trees had not a dozen apples.

The orchard tent caterpillar and his relative, the forest tent caterpillar, got in a good deal of harmful work about here last season. My trees suffered little from that cause, however, as I find that a teaspoonful of kerosene will destroy ten thousand without injuring the trees, and I apply it; but some careless neighbors have left plenty of egg rings on their trees for next summer's supply. The curculio was seen among us for the first time in 1879, and made sad havoc with our wild plums — we have not succeeded in raising any other.

Per contra, we have learned that our best hope of future success lies in seedlings grown *here*, and after proved hardy, root grafting with cions of known hardy varieties; that at present, we must be content with a very short list of apple trees; that as yet, only Duchess and Tetofsky are perfectly reliable, with strong probabilities in favor of Fameuse, Haas and Wealthy; that the indigenous wild plum is sure to fruit, and that the curculio is almost as sure to spoil the crop; that the wild plum of Nebraska is apparently perfectly hardy here, but its fruit will not mature, remaining hard and green until the hard frosts of late October. We have also learned that shade trees, like the maples, are best grown from seed, as no other maples will bear transplanting in this section.

We have *observed* that our Minnesota neighbors allow their Transcendents and pure Siberians to grow in bush form, like the quince, or the alder; that in that shape they best withstand the violent prairie winds, and afford their own protection from the fervid rays of the February sun, and their fruit, if not of better quality, is more abundant. The custom "looks odd." We have also noticed that large tracts of our clay lands, which were denuded of timber by forest fires a few years ago, have put on the

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semblance of prairie lands, as well in the character of the grasses as in the absence of timber, and that they yield as large and more sure crops of wheat on the first plowing, as the best Minnesota prairies.

We also note that as the area of cultivated and cleared land enlarges, the better varieties of corn ripen, and that we may look with reasonable confidence to harvest ripe corn of the twenty-four rowed dent and the sixteen rowed sweet varieties, which a few years ago was impossible here.

In view of these facts, it is hoped that a few years and more extended cultivation of our rich lands will enable us to raise at least our own apples. It seems to me, individually, that this section should be the very home of the pear, but I am not sufficiently accomplished in grafting to succeed as yet in demonstrating it.

TWELFTH DISTRICT — J. M. SMITH, GREEN BAY.

COUNTIES.— *Brown, Kewaunee, Door and Oconto.* There is but very little that is either new or interesting to report from this district for the past year. There is a slow but gradual improvement in the line of fruit growing, in nearly all of the varieties that are fitted for our climate.

No large orchards are being set, but many are setting a few trees each, and, as a general thing, are using better judgment than formerly in their selection of them.

The apple crop last season was light; still, judging from my own observation, and from the best information at hand, it was much better here, in proportion to the number of bearing trees, than in the southern portion of the state. The strawberry crop was more than an average one. The Wilson is still the leading variety. Many others are being tried, and the future will tell with what success. Raspberries and blackberries were both damaged by the summer drought, and yielded but light crops. The currant crop was good. Cherries were more than usually abundant. The grape crop was a fair one. In one of the best vineyards in the district, the Agawam rotted badly. The Delaware still shows itself remarkably well adapted to our Fox river valley. I have some eight or ten varieties in bearing, but the Delaware

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certainly gave more pounds per vine than any of the others, although I have the Concord and the Janesville of the same age. I believe that my experience is that of nearly every grower about me, who takes care of his vines. Upon the whole the prospect is encouraging, rather than otherwise. I doubt not that the time will come when the Fox river valley will not only raise her own fruit, but will grow it for export; but how soon, must depend upon the skill and intelligence of those who are engaged in the business.

REPORT OF FINANCE COMMITTEE.

The committee on finance having examined the report of the treasurer, find that there has been received by the treasurer the sum of $719.19, and that he has paid out, as per vouchers presented, $556.20, leaving a balance on hand of $162.99, with a claim of $25.00 still outstanding.

A. J. PHILIPS,
A. G. TUTTLE,
D. T. PILGRIM,
Committee.

HORTICULTURAL DEPARTMENT AT THE STATE FAIR.—Mr. Pilgrim, the superintendent of the fruit and flower department at the state fair, was called on for his report, which he presented as follows:

FRUIT AND FLOWER EXHIBITION AT THE STATE FAIR, 1879.

Mr. President and Friends:—It is not my intention to take up the time of this society with details which can be gathered from the report of premiums awarded, so I have endeavored to make my report as brief as possible, and yet present such facts as are most worthy of mention.

There were on exhibition 3,000 plates of fruit, and more would have been shown had there been room to exhibit it. A large quantity of fruit was not unpacked. This, I think, is the largest exhibition of fruit we have ever had; and is an indication of increased interest by the people of the state in the department of horticulture. I had to employ carpenters to make shelves upon the walls to accommodate much that was exhibited. I would

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suggest the enlargement of accommodations for this department before another exhibition takes place.

The professional and non-professional exhibitors were out *en masse*, and seemed to vie with each other to make the department a success. They are deserving of credit for the care taken in arranging and making their selections.

Among the professional fruit growers present, were G. P. Peffer, A. G. Tuttle, C. H. Greenman, Wm. Reid, J. C. Plumb, G. J. Kellogg, and others. Among the non-professionals, were D. Huntley, Geo. Jeffery, Dr. J. Ozanne, Mr. Warner, A. J. Philips, Victor Lowe, Mrs. A. A. Boyce, and others. Of the professional florists present, were Wm. Kitzrow, G. W. Ringrose, Mrs. Williams, and others. Non-professional, Miss Kate Peffer, Mrs. A. A. Boyce, Mrs. Mallory, and others.

The show of cut flowers and plants was truly magnificent. Much taste and skill in design was manifest throughout the entire display.

I desire to thank the exhibitors for their kindness to me, and for the harmony which prevailed among them at our last exhibition.

PREMIUMS AWARDED in the Fruit and Flower Department of the Fair of 1879:

Fruits by Professional Cultivators.

APPLES.

Best and greatest display of apples, twenty varieties, A. G. Tuttle, Baraboo	$10 00
Second best, Wm. Reid, North Prairie	7 00
Third best, G. P. Peffer, Pewaukee	5 00
Best ten varieties apples adapted to northwest, G. P. Peffer, Pewaukee,	7 00
Second best, L. L. Kellogg, Janesville	5 00
Third best, John Howie, Waunakee	3 00
Best five varieties apples adapted to northwest, G. P. Peffer, Pewaukee	3 00
Second best, N. N. Palmer, Brodhead	2 00
Third best, L. L. Kellogg, Janesville	1 00
Best and largest variety winter apples, not to exceed ten, G. P. Peffer,	5 00
Second best, N. N. Palmer, Brodhead	3 00
Third best, Wm. Reid, North Prairie	2 00
Best five varieties winter apples, G. P. Peffer	3 00
Second best, N. N. Palmer	2 00
Third best, L. L. Kellogg, Janesville	1 00
Best show ten varieties large and showy apples, Wm. Reid	5 00
Second best, A. G. Tuttle, Baraboo	3 00
Third best, J. C. Plumb, Milton	2 00

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Largest apple, G. P. Peffer, Pewaukee	$1 00
Heaviest apple, G. P. Peffer, Pewaukee	1 00
Best plate Plumb Cider, John Howie, Waunakee	1 00
Best plate Haas, G. P. Peffer	1 00
Best plate Fameuse, A. G. Tuttle, Baraboo	1 00
Best plate Walbridge	1 00
Best plate Utter, Wm. Reid, North Prairie	1 00
Best plate Westfield Seek-no-Further, G. P. Peffer	1 00
Best plate Talman Sweet, John Howie, Waunakee	1 00
Best plate St. Lawrence, N. N. Palmer, Brodhead	1 00
Best plate Duchess of Oldenburg, Wm. Reid, North Prairie	1 00
Best plate Willow Twig, N. N. Palmer	1 00
Best plate Wealthy, G. P. Peffer	1 00
Best plate Pewaukee, G. P. Peffer	1 00

PEARS.

Best and greatest display of varieties, G. P. Peffer	$3 00
Second best, Wm. Reid	2 00
Best three varieties, G. P. Peffer	2 00
Best Flemish Beauty, A. G. Tuttle, Baraboo	2 00

PLUMS.

Best and greatest variety, G. P. Peffer	$3 00
Best Miner, G. P. Peffer	1 00
Best native or wild, G. P. Peffer	1 00

Grapes and Crabs by Professional Cultivators.

GRAPES.

Best and greatest display of varieties, C. H. Greenman, Wauwatosa	$10 00
Second best, Wm. Reid, North Prairie	7 50
Third best, N. N. Palmer, Brodhead	5 00
Best ten varieties, Wm. Reid	7 50
Second best, C. H. Greenman, Wauwatosa	5 00
Third best, Henry Schuster, Middleton	3 00
Best five varieties, Wm. Reid	3 00
Second best, C. H. Greenman	2 00
Third best, L. L. Kellogg, Janesville	1 00
Best three varieties, Wm. Reid	3 00
Second best, C. H. Greenman	2 00
Third best, Henry Schuster, Middleton	1 00
Best two varieties, Wm. Reid	2 00
Second best, Henry Schuster	1 00
Best single variety, Wm. Reid	2 00
Second best, C. H. Greenman	1 00
Best three bunches Concord on one cane, Wm. Reid	2 00
Second best, C. H. Greenman	1 00
Best three bunches Delaware on one cane, Wm. Reid	2 00
Best single variety, quality to rule, Wm. Reid	3 00
Second best, C. H. Greenman	2 00
Best show foreign, under glass, G. P. Peffer	3 00

CRABS.

Best and greatest variety named, G. P. Peffer	$3 00
Second best, Wm. Reid	2 00
Third best, N. N. Palmer	1 00
Best plate Hyslop, Henry Schuster	1 00
Best plate Transcendent, Wm. Reid	1 00
Best Whitney's No. 20, C. H. Greenman	1 00
Best seedling crab, G. P. Peffer	2 00

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SWEEPSTAKES ON FRUITS OF ALL KINDS.

Best collection of fruits of all kinds, G. P. Peffer	$7 00
Second best, Wm. Reid	5 00
Third best, N. N. Palmer	3 00

Fruits by Non-Professional Cultivators.

APPLES.

Best and greatest display of varieties, not to exceed twenty, P. J. Foster, Rock Springs	$10 00
Second best, W. C. Warner, Baraboo	7 50
Third best, Geo. Jeffery, Milwaukee	5 00
Best ten varieties adapted to northwest, D. Huntley	7 00
Second best, J. P. Foster, Rock Springs	5 00
Third best, A. J. Phillips, West Salem	3 00
Best show of ten varieties of large showy apples, W. C. Warner	5 00
Second best, P. J. Foster	3 00
Third best, George Jeffery	2 00
Best five varieties adapted to northwest, A. J. Philips	3 00
Second best, P. J. Foster	2 00
Third best, W. C. Warner	1 00
Best and largest variety winter, not to exceed ten, D. Alcott, Brodhead	5 00
Second best, B. B. Olds, Clinton	3 00
Third best, A. J. Philips	2 00
Best five varieties winter, J. R. Brabazan, Delavan	3 00
Second best, P. J. Foster, Rock Springs	2 00
Third best, B. B. Olds	1 00
Largest apple, Andrew Viall, Madison	1 00
Heaviest apple, D. Alcott, Brodhead	1 00
Best plate Plumb Cider, P. J. Foster	1 00
Best plate Haas, A. J. Philips	1 00
Best plate Fameuse, P. J. Foster	1 00
Best plate Walbridge, P. J. Foster	1 00
Best plate Utter, P. J. Foster	1 00
Best plate Westfield Seek-no-Further, Cutter & Palmer	1 00
Best plate Tallman Sweet, P. J. Foster	1 00
Best plate St. Lawrence, P. J. Foster	1 00
Best plate Duchess of Oldenburg, M. E. Spring, Baraboo	1 00
Best plate Willow Twig, P. J. Foster	1 00
Best plate Wealthy, A. J. Philips	1 00
Best plate Pewaukee, A. J. Philips	1 00

PEARS.

Best and greatest display of varieties, Geo. Jeffery	$3 00
Second best, James Ozanne, Somers	2 00
Third best, Mrs. A. A. Boyce	1 00
Best three varieties, Geo. Jeffery	2 00
Second best, James Ozanne	1 00
Best Flemish Beauty, D. Alcott	2 00

PLUMS.

Best and greatest variety, Geo. Jeffery	$3 00
Best Miner, D. Alcott	1 00
Best native or wild, Mrs. A. A. Boyce	1 00

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Grapes and Crabs, by Non-Professional Cultivators.

GRAPES.

Best and greatest display of varieties, V. Lowe, Palmyra	$10 00
Second best, F. S. Lawrence, Janesville	7 00
Best ten varieties, V. Lowe	7 50
Second best, Victor Wayman, Madison	5 00
Third best, F. S. Lawrence	3 00
Best five varieties, George Ringrose, Wauwatosa	3 00
Second best, Victor Wayman, Madison	2 00
Third best, V. Lowe, Palmyra	1 00
Best three varieties, V. Lowe	3 00
Second best, George Ringrose, Wauwatosa	2 00
Third best, Hermann Tiedemann, Middleton	1 00
Best two varieties, F. S. Lawrence	2 00
Second best, V. Lowe	1 00
Best single variety, Victor Wayman	2 00
Second best, George Ringrose	1 00
Best three bunches Concord, one cane, V. Lowe	2 00
Second best, Victor Wayman	1 00
Best three bunches Delaware, one cane, V. Lowe	2 00
Second best, F. S. Lawrence	1 00
Best single variety, quality to rule, F. S. Lawrence	3 00
Second best, V. Lowe	2 00

CRABS.

Best and greatest variety named, George Ringrose	$3 00
Second best, A. J. Philips	2 00
Third best, George Jeffery	1 00
Best plate Hyslop, A. J. Philips	1 00
Best plate Transcendent, George Ringrose	1 00
Best plate Whitney's No. 20, A. J. Philips	1 00
Best seedling crab, D. Alcott	2 00

SWEEPSTAKES ON FRUIT OF ALL KINDS.

Best collection of fruit of all kinds, George Jeffery	$10 00
Second best, James Ozanne	5 00

Nursery Trees.

Best collection of evergreens, J. C. Plumb, Milton	Diploma
Best collection of fruit trees, J. C. Plumb, Milton	Diploma

Flowers by Professional Cultivators.

Best and most artistically arranged floral design, Wm. Kitzrow	$5 00
Second best, Mrs. J. E. Williams, Madison	3 00
Best and most tastefully arranged collection of cut flowers, Geo. Ringrose	4 00
Second best, Wm. Kitzrow, Milwaukee	3 00
Third best, O. P. Freeborn, Milton	2 00
Best pyramidal bouquet, Wm. Kitzrow	3 00
Second best, Mrs. J. E. Williams	2 00
Best pair flat table bouquets, Wm. Kitzrow	2 00
Second best, Mrs. J. E. Williams	1 00
Best pair hand bouquets, Wm. Kitzrow	2 00
Second best, Geo. Ringrose	1 00
Best bouquet everlasting flowers, Wm. Kitzrow	3 00
Second best, H. G. Roberts, Janesville	2 00

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Best ten named dahlias, Wm. Kitzrow	$2 00
Second best, J. C. Plumb, Milton	1 00
Best display of roses, Wm. Kitzrow	3 00
Second best, O. P. Freeborn, Milton	2 00
Best five named varieties of roses, Wm. Kitzrow	3 00
Best display of verbenas, O. P. Freeborn	2 00
Second best, Geo. Ringrose	1 00
Best show of pansies, O. P. Freeborn	1 00
Best show of double petunias, Wm. Kitzrow	1 00
Best show of gladiolus, Wm. Kitzrow	1 00
Best show greenhouse plants, not less than fifty nor more than one hundred varieties, Wm. Kitzrow	7 50
Second best, Mrs. J. E. Williams, Madison	5 00
Best twenty varieties greenhouse plants in bloom, Wm. Kitzrow	3 00
Second best, Mrs. J. E. Williams	2 00
Best ten geraniums, Wm. Kitzrow	3 00
Second best, O. P. Freeborn	2 00
Best six fuchsias, Wm. Kitzrow	2 00
Second best, Mrs. J. E. Williams	1 00
Best display of flowers of all kinds grown by exhibitor, Wm. Kitzrow	5 00
Second best, O. P. Freeborn	3 00
Best display of ornamental foliage plants, not more than fifteen varieties, Wm. Kitzrow	3 00
Second best, Mrs. J. E. Williams	2 00

Flowers by Non-Professional Cultivators.

Best and most artistically arranged floral design, Miss Kate Peffer	$5 00
Second best, Mrs. Geo. F. Brown, Madison	3 00
Best and most tastefully arranged collection of cut flowers, Mrs. A. A. Boyce	4 00
Second best, Miss Kate Peffer, Pewaukee	3 00
Third best, John Joy, Madison	2 00
Best and most tastefully arranged basket of flowers, Miss Kate Peffer	3 00
Second best, Mrs. Geo. F. Brown, Madison	2 00
Best pyramidal bouquet, Mrs. John Corscot, Madison	3 00
Second best, Miss Kate Peffer, Pewaukee	2 00
Best pair round bouquets, Miss Kate Peffer	3 00
Second best, W. T. Leitch, Jr., Dane	2 00
Best pair flat table bouquets, Miss Gertie A. Kellogg, Janesville	2 00
Second best, Mrs. J. R. Heistand, Madison	1 00
Best pair flat hand bouquets, Miss Kate Peffer	2 00
Second best, Mrs. John Joy, Madison	1 00
Best bouquet of everlasting flowers, Miss Carrie Wildhagen	3 00
Second best, W. T. Leitch, Jr., Dane	2 00
Best display of dahlias, not more than twenty varieties, Miss Kate Peffer	2 00
Second best, J. R. Brabazan, Delavan	1 00
Best ten named dahlias, Mrs. John Joy, Madison	2 00
Second best, Mrs. A. A. Boyce, Lodi	1 00
Best display of roses, Geo. Ringrose, Wauwatosa	3 00
Best five named varieties of roses, Miss Carrie Wildhagen, Madison	3 00
Best display of verbenas, Miss Carrie Wildhagen, Madison	2 00
Second best, Mrs. J. R. Heistand, Madison	1 00
Best ten named named verbenas, Miss Kate Peffer	2 00
Second best, Miss Carrie Wildhagen, Madison	1 00
Best show of asters in quantity and variety, Miss Carrie Wildhagen	2 00
Second best, J. R. Brabazan	1 00
Best show of perennial phlox, Miss Kate Peffer	1 00
Second best, Mrs. John Joy, Madison	50
Best show of pansies, Mrs. L. T. Mallory	1 00
Second best, Mrs. John Corscot, Madison	50

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Best show Double Petunias, Miss Carrie Wildhagen	$1 00
Second best, Mrs. A. A. Boyce, Lodi	50
Best show Dianthuses (pink), Mrs. Geo. F. Brown	1 00
Second best, Miss Carrie Wildhagen	50
Best show Gladiolus, Mrs. L. T. Malloy	1 00
Second best, Miss Kate Peffer	50
Best show Phlox Drummondi, Miss Carrie Wildhagen	1 00
Second best, Mrs. L. T. Mallory	50
Best show Tube Rose, Mrs. A. A. Boyce, Lodi	1 00
Best show Lilies, Mrs. Geo. F. Brown	1 00
Second best, Wm. Reid, North Prairie	50
Best show Stocks, Mrs. A. A. Boyce, Lodi	1 00
Best show Balsams, Mrs. John Joy, Madison	1 00
Best show green-house plants, not less than twenty-five nor more than fifty varieties, Mrs. L. T. Mallory	5 00
Best ten varieties green-house plants, in bloom, W. G. Pitman, Madison	3 00
Best ten Geraniums, Mrs. L. T. Mallory	3 00
Second best, Mrs. John Joy, Madison	2 00
Best six Fuchsias, Mrs. John Joy	2 00
Second best, Miss Carrie Wildhagen	1 00
Best display of flowers raised by exhibitor, Mrs. L. T. Mallory	5 00
Second best, Miss Kate Peffer	3 00
Best show of ornamental foliage plants, not more than ten varieties, Mrs. L. T. Mallory	3 00
Second best, Mrs. W. G. Pitman, Madison	2 00

Special Premium by A. R. WHITNEY, *Franklin Grove, Ill.*

Best plate Whitney's No. 20, A. J. Philips, West Salem	$3 00
Second best, George Ringrose, Wauwatosa	2 00

D. T. PILGRIM, *Superintendent.*

The society adjourned to meet in joint convention at 7 o'clock in the evening, and on call of the president, for the transaction of special business.

FEBRUARY 4 — 7 O'CLOCK P. M.

A business session was held at 7 P. M. of the 4th, at which Mr. J. S. Stickney, who represented the society at the American Pomological Society meeting in Rochester, N. Y., September 17 and 18, 1879, made the following

REPORT OF THE AMERICAN POMOLOGICAL SOCIETY MEETING.

Mr. President and Gentlemen :— At the meeting of the American Pomological Society, at Rochester, N. Y., in September last, this society was represented by a delegate and a goodly amount of fruit. You will all feel gratified to know that the fruit conducted itself in a becoming manner, and though thrown into very

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high company, betrayed no want of culture or fine training. I can only report of the delegate that he did the best he could.

The fruit for this exhibit was very promptly and freely contributed by Messrs. Tuttle, Peffer, Olds, Foster, Reid, Plumb, Palmer, Greenman, Lowie, Hawes, Howie Bros., Boyce, Jeffery, Wehmer, Philips, Viall, Alcott and others, from their state fair exhibit. Also choice collections or specimens were sent to me direct from the orchards by Messrs. Olds, Freeborn & Hatch, E. B. Thomas, E. Wilcox, A. Crawford, Rev. M. Clinton, of Menasha, W. T. Nelson, of Winneconne; and from Dr. Hoy and Mr. Pollard, very fine specimens of foreign grapes. To all these I desire to express my thanks and the thanks of this society.

From this fruit, we selected and placed on exhibition twenty-seven varieties of native grapes, five of foreign grapes, two of plums, fifteen of pears, six of crab apples, and fifty-eight of apples, nearly all full plates of very fine specimens. The varieties of crab apples could have been increased indefinitely, and of apples nearly doubled, but the increase of *numbers* would have added nothing to the *fine appearance* of our showing. After all was in place, and an anxious glance taken over all that vast collection, gathered from all the great fruit centers, it was a pleasure and a relief to feel that our apples and our grapes, though few in numbers, in fine appearance and apparent good quality would compare favorably with the best. Our apples, especially Alexander, Utter and Wealthy, elicited unqualified praise from men well fitted to judge. And here I may state, as showing what is also possible for us, that nothing finer, more attractive or beautiful could be found on any table, than plates of Wealthy and some four other seedlings, sent from Excelsior by our friend Gideon. A few choice apples and new hybrids from the Jewell nurseries were also as good as the best, and attracted much attention.

One friend enquries why Wisconsin fruits were not mentioned in the awards? Two reasons suggest themselves. Perhaps they were not sufficient in quantity and variety to be deemed worthy, or perhaps there were not Wilder medals enough to *go around*. Our forty-eight plates of apples were in competition with over

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eight hundred others; our fifteen pears with over five hundred others; our thirty-two grapes with three hundred and sixty-seven others. And our want of honors was shared by numerous other exhibitors, both public and private. We started out, not with the hope of winning prizes, but to demonstrate to observing horticulturists the fruit resources of Wisconsin; that those who saw might be led to think and speak of our state, if not as being highly favored, at least as affording to her citizens an abundant supply of really good and choice fruit. I think the object sought was fully attained, and that the trifling outlay will return to us an hundred fold.

The American Pomological Society is the highest authority, and enlists in its service the very best talent in the land. In such a convention, whose tables were crowded and filled with the fruits of such favored regions as Michigan, Ohio, Iowa, Missouri, New Jersey, New York, and Canada West, and whose councils were conducted by such men as Wilder, Parsons, Beadle, Meehan, Douglas, Warder, Barry, and a host of others, of course our place was some quiet corner, where like good little children we could be seen and not heard, and our especial mission was to listen, observe and learn. That we did listen and did learn, I am sure; that we can place the knowledge so gained before you in presentable form, is not so certain.

Nowhere, except in the northwest, is there such need of and earnest search after extra hardy apples, consequently there was in those eastern collections little of this kind to interest us. The "Mann Apple," being disseminated by Messrs. Moody & Sons, of Lockport, New York, is a good sized, fine appearing fruit, something of the Rhode Island Greening style, and is claimed to be a vigorous, fine growing tree, very productive, hardy enough for the northwest, and a long keeper. New early peaches and new grapes, especially white varieties, seem to be the objects of most interest with eastern and southern horticulturists. Not less than six new white grapes were on exhibition, the claims of each being urged by one or more gentlemen, holding a tasting sample in one hand and an attractive circular in the other. They all looked well (the grapes, I mean), and tasted well, and the circu-

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lars all told pleasant stories, and made good promises. Doubtless some of them will prove of value to us.

Guided by the imperfect judgment one could form at such an exhibition, I should first try the Prentiss and the Niagara. Moore's Early is a fine appearing, dark grape, equal to or a little better than the Concord; large berries, and fine, large clusters; and generally admitted by all who have fruited it to be at least a week earlier than the Concord. This will doubtless be valuable for us. The Worden was freely discussed, and evidently has a strong hold on the affections of eastern growers. This will be a pleasant item for friend Kellogg, who has been its strong advocate here. Doubtless there were many other good things in sight, which may have value for us, yet surrounded and overshadowed by such beauty and magnificence as to be most effectually hidden.

Adjoining our fruit tent was the fruit and floral tent of the Western (N. Y.) Agricultural Society, a very large space, packed and crowded with fruit and flowers. Here, most showy and attractive of all, were the gladiolus and pansy, each of easy culture, and as much at home in Wisconsin as at Rochester, yet rarely well grown here, and rarely seen on our exhibition tables in quality or quantity to command admiration or stimulate their cultivation.

When our convention closed, I went from Rochester to Dansville, up that famed Genesee valley, the olden time "Garden of the West." It was a day ride, both going and coming, and my eyes were wide open to see how the villages, farms and general improvements compared with our own. The canal, which thirty years ago was the great highway of its commerce, was discontinued some time since, and numerous boats lay in its bed dismantled and falling to pieces. Some of the villages compare favorably with ours; others gave evidence of decline rather than prosperity, and the average farm buildings showed unmistakable neglect and dilapidation. Live stock, both in cattle and horses, were fully equal, perhaps better than ours, but in the fields I saw more acres of white beans than corn.

It is our custom to think of western New York as about the center of all that is beautiful and desirable in horticulture; and

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it is true that she does afford many, very many, good advantages not possible for us. Yet it is also true that, to-day, her nurserymen and fruit growers are quite as deep in losses and discouragements as are we, and quite as often meet with failures and disappointment in working out their plans, or fulfilling what is required of them. Should it not be our highest ambition to fully develop and work out the very best results with the materials at our command, and well suited to our needs?

Following the reading of the report, Mr. Stickney gave an interesting account of some of the difficulties that had to be encountered in carrying out the duty laid upon him and some of the practical lessons to be learned at such an exhibition. He was not able to attend the sessions of the Pomological Society as constantly as he would have liked to do, owing to the necessity of arranging for the exhibition of the fruit, which, unfortunately, was not only in a different building from the meetings, but three miles away, in connection with a regular fair exhibition.

He spoke very highly of some of the new varieties of grapes on exhibition there, especially the Prentiss, which gave promise of being very hardy and productive. Specimens of cane were shown there, twenty inches in length, with six spurs, each spur bearing two or three well developed bunches of grapes, and one or two with four bunches.

The display of pears, he spoke of as wonderful, both in number, quality, variety and beauty, indicating clearly that much interest is being taking at the east, especially about Rochester and in Massachusetts, in pear culture. Such an exhibition was calculated to create enthusiasm on the subject, and would naturally lead those seeing the magnificent display to try and raise this rich fruit for themselves. He was of the opinion, that with all our discouragements and failures in cultivating pears, we should keep on, in a small way, with our experiments, and he had faith to believe that we should be able to accomplish much.

Mr. Kellogg said he had, perhaps, modified his views on the question of pear culture in this state, but was still of the opinion that it never would be generally successful. One trouble is, our

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soil is too rich; the trees grow too rapidly, and are hence lacking in hardiness. In the section where that Green Bay pear orchard is situated, the land is very poor; we should not regard such land worth twenty-five cents an acre, and he thought that this character of the soil was one thing which contributed to the health and productiveness of those trees.

Mr. Plumb stated that the usual farm crops raised on the same farm indicated rather more than an average fertility; the soil was largely composed of sand, but the subsoil was clayey, and both it and the surface soil were rich in mineral elements adapted to fruitfulness. Some of the apple trees on the same farm were loaded with fruit; one tree bore twenty-three bushels the past season; he saw quite a number of trees there that were heavily loaded; in the southern part of the state, they would be regarded as bearing a full crop, with only a third as much fruit on them.

He believed the soil was a good strong soil, and well calculated to promote a healthy growth; other things which contributed to their hardiness and fruitfulness were the free circulation of air; the influence of the lake on one side, and the bay on the other, modifying the atmosphere; the location was well underdrained, and the regular, annual yield of fruit prevented an excessive growth of wood during the summer season, while the modifying influences of the elevation and the water surrounding lengthened out the season after the fruit ripened, and thus still further secured development and strength of the fruit buds, and a thorough maturity of the wood growth.

The unanimous thanks of the society were voted to Mr. Stickney for the faithful manner in which he had performed his duty as its representative and the interesting report he had given.

ENTOMOLOGICAL CABINET.—Information being called for in regard to what was the prospect of securing the entomological collection mentioned at the previous meeting, the secretary stated that Dr. Hoy had renewed his offer to contribute freely to making a large collection and that others would also aid in the work; but the society had not yet provided for anything definite. Before any collections could be made, a suitable case must be pro-

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vided, and it would be necessary to have it made expressly for this purpose. He had but little doubt but that the governor, if the matter were properly presented to him, would authorize the state carpenter to aid in the work, or would have the case made at the expense of the state. He thought it would be best for the society to see if it could not be secured in this way, and if not, then to provide a case the best we could with our own funds.

The following resolutions were introduced by Mr. Stickney and passed without dissent:

WHEREAS, The Wisconsin State Horticultural Society, having through the courtesy of Dr. P. H. Hoy, of Racine, been tendered a collection of the most common and injurious insects of our state, preserved and arranged; and

WHEREAS, This collection is worthy of, and requires some specially constructed cases for its preservation and exhibition, so that it may be accessible for examination by the public; therefore

Resolved, That the committee of this society are hereby requested to ask of Governor Smith, that he will secure the construction of the necessary means for its preservation and exhibition.

Resolved, That our secretary is authorized to make specifications for such an entomological case as we need, and request the governor to order such case for our use at the state expense. And that in case such request fails, then he is instructed to expend thirty dollars of the society's funds, for the case best adapted for such purpose that said sum will procure.

On motion of the secretary, the president and Mr. Stickney were also authorized to act with the secretary.

It was voted to appropriate the sum of ten dollars to defray the postage expenses incurred by the president in his correspondence for the society.

A motion was made that in case the society should fail to secure the appropriation applied for, and hence be unable to carry out the plan of meeting with various local societies as proposed in the resolutions passed at the first session, that it accept the invitation of the citizens of Galesville, to hold its summer meeting at that place. Carried.

It was also voted, that in view of the demand that would be made on the members of the society to aid in carrying out the plan of holding a number of conventions in connection with local horticultural exhibitions, should we receive the appropriation, and that too, at, to them, the most busy season of the year, that the

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traveling expenses of those members appointed to take part, should be defrayed out of the society's funds.

FRUIT ON EXHIBITION.— The committee appointed to inspect the fruit on exhibition presented their report.

REPORT OF COMMITTEE ON EXHIBITION OF FRUIT.

Mr. Charles Hirschinger exhibited twenty-five varieties of apples, and three of crabs, in fine condition.

Mr. B. B. Olds, of Clinton, shows ten varieties of apples; Golden Russet, Rawle's Janet and others, in splendid condition, showing the good effects of careful handling in the preservation of fruit.

Mr. A. J. Philips, of West Salem, shows nine named varieties of apples, fine looking fruit, four seedlings, one at least of them promises to be a valuable acquisition to the apple list of Wisconsin, also the Gen. Grant crab.

Mr. Peffer, of Pewaukee, has a fine and large showing of fruit, consisting of twenty-eight varieties of apples, five of crabs, two of pears, and a seedling which promises to be valuable.

Mr. Jordan, of Rochester, Minnesota, has five named varieties of apples; Wealthy, Melinda, and others, and three seedlings.

Mr. Underwood, of Crystal Lake, Minnesota, shows some very fine specimens of the Wealthy apple.

Mr. J. C. Plumb, of Milton, shows two varieties of Hill's Seedlings, fine looking, winter fruit of excellent quality; also a specimen of the Chinese pear, from Charles Downing, a variety which has the merit of extreme hardiness and adaptation to cold climates.

Mr. T. D. Plumb, Jr., of Madison, exhibited samples of the Duchess potato, which has proved to be an immense cropper with him, and of high quality; season, medium late; yielding at the rate of one hundred and eighty-nine bushels per acre, side by side with the Snow Flake, which produced but seventy-six bushels per acre.

Mr. H. M. Thomson, of St. Francis, shows some very fine specimens of different varieties of apples, among them some fine looking Rhode Island Greenings.

Wm. Springer, of Fremont, shows several varieties of seed-

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lings, Weyauwega, Wrightman and others. His so called Wolf River, the committee have examined, and after carefully testing and comparing it with the Alexander, have decided that the two apples are identical, and so report to the society.*

Mr. J. W. Wood, of Baraboo, had on exhibition two varieties of sweet potatoes in very fine condition, raised by himself on his farm at Baraboo.

* In justice to the other members of the society, it should be stated that the opinion here expressed is that of the committee alone, and cannot be said to be endorsed by the society because published in this report. The question was not brought before the society for consideration at all. The condition of the specimens on which this opinion was based, should be taken into consideration. Both kinds were long past their prime, and had lost their peculiar characteristics of flavor and texture. Of the two, the Alexander was, perhaps, the most out of season. And again, the fact that these individual specimens had kept so much beyond their time, the last of the whole crop, even though the result of artificial handling, makes it very probable that they had been picked much before maturity, or that owing to position or other surrounding influences, they had not reached their normal development in form, marking or quality, so as to entitle them to be justly regarded true types of their respective varieties. The statement that the two were identical, has been made before, but it seems to us impracticable to substantiate it by the comparison here made. SECRETARY.

NOTE BY CHAIRMAN OF COMMITTEE ON NOMENCLATURE.—The decision of this committee, in so far as it decides the Wolf River to be the old and well known Alexander, is objected to by the chairman of the committee on Nomenclature, who furnishes the following testimony:

1st. "That the exhibitor avers the specimens of Wolf River were from the original tree;" and

2d. Gives the following points of distinction, viz.: "The Alexander is more upright in growth; young wood, grayish green; buds gray and somewhat elongated; leaves broad, smooth and quite round; serratures obtuse.

"The Wolf River, in general style, resembles the former, but its young wood at maturity is quite dark and glossy red; buds broad, full, red; foliage ovate, pointed, ruffled; serratures quite pointed and irregular. These are fundamental distinctions which do not vary with local conditions, and more to be relied upon than comparison of specimens."

Since the report was made we have examined the wood growth of the two varieties, taken from trees growing side by side, and find the distinction so marked, that even a novice would readily assort a mixed collection of the clons, without difficulty. These facts not being before the committee, and their report not coming before the society for adoption, it is easy to see how it may have been modified, had all the facts been before them.

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Mr. Hunt, of Evansville, exhibited a specimen of McIntosh's Red, from Vermont, originated in Canada, in same locality with the Fameuse, and recommended as superior in hardiness of tree, and in flavor and long keeping of fruit.

Respectfully submitted,

GEO. P. PEFFER,
A. G. TUTTLE,
A. SMITH, *Committee.*

CULTURE OF DAHLIAS.—Mr. Hatch said that he had found it very essential to success in the cultivation of dahlias to secure thoroughly matured bulbs; bulbs that were not mature would grow, and often make a very rank growth of stalk, but the flowers were apt to be imperfect and few in number. He had found that the best bulbs were those grown on high land, in what it called a clay soil, such a soil as we find associated with white oak brush. He had found it advisable to regulate their growth by pruning or pinching; sometimes they would branch too much, and would make so great a growth of stalk as to prevent early and free blooming; to prevent this he pruned as one would tobacco; at other times it is necessary to pinch off the first buds to check upward growth and throw out side shoots. He would like to have others give the best method of cultivation.

Mr. Plumb had had much experience in raising dahlias, and found he had the best success on the poorest land. His practice was to plow a deep furrow in which he put well rotted manure, and planted the bulbs in the manure, covering them with earth, and they grew right along. The plants should be well trimmed, staked and watered if season is dry, and the bloom will be satisfactory.

GRAPE ROT.—President Smith asked if any of the members had been troubled with the grape rot; with them the Rogers grapes had rotted, especially No. 15. The vines were also struck with mildew.

Mr. Hatch said that the fruit on the Roger's vines rotted badly with them the past season; some of the clusters were entirely destroyed; in others, only a portion of the bunch was injured, or here and there a few scattering berries. He attributed it to mil-

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dew or fungoid growth, favored by the season or condition of the vines. This or some other cause had affected nearly all kinds of fruit the past season, and greatly impaired its keeping qualities. It may have been, in part, due to overripeness, occasioned by the hot, dry weather in October, but this was not all the cause of the decay. They had experienced great difficulty in keeping the fruit after it had been canned, much greater than ever before. They had such an abundance of small fruit that they could not market it all at paying rates, and had resorted to the canning process to preserve it, but notwithstanding they took great pains in the selection of the fruit, and in putting it up, they lost nearly the whole of it. The fruit seemed to be defective generally. In canning, great care should be taken to use only ripe and well matured fruit. He would recommend that all canned fruit should be kept in a cool place, with the bottom of the can up, so as to more completely exclude the air. They should be put in this position as soon as canned.

INSECTS.— Mr. Tuttle said he had been troubled with the canker worm for five or six years, but found that they could be very easily controlled. They seemed to attack certain trees more than others, coming on them year after year. His remedy was to sprinkle the trees infested with arsenic in solution; could wash a tree thoroughly in five minutes; two cents worth of arsenic to a tree was enough. He thought a pound of arsenic to sixty gallons of water was too strong; he had put eighty gallons to a pound, and that turned the leaves brown; he believed a pound of arsenic to one hundred gallons of water would be strong enough.

Mr. Plumb had noticed that the curculio went from wild plum trees standing in his orchard to the Duchess and stung the fruit; he thought that if we do not try to kill the curculio on our plum trees we had better dig up the trees or they will do serious injury to our apple crop.

A motion was made and carried authorizing the secretary and Mr. Peffer to look up the records in regard to the premiums on seedlings; to see what had been paid, and what were yet entitled to receive a premium, and to report.

Society adjourned without day.

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HORTICULTURAL

ADDRESSES, PAPERS AND DISCUSSIONS,

BEFORE THE

JOINT CONVENTION

AT THE

ANNUAL MEETING OF THE SOCIETY, HELD AT MADISON, FEBRUARY 2-6, 1880.

POISON IN HORTICULTURE.

J. W. WOOD, BARABOO.

The immense increase of acreage in all departments of agricultural labors in the United States has been attended, of late years, by a still more rapid increase of the enemies with which we have to contend. The remarkable development of our insect enemies, by which species heretofore obscure have suddenly obtained national reputations, and in the great increase of the numbers of the well known ones, has become very alarming, and threatens the complete extinction of many important productions. New enemies are springing into notice every season. Some of them are foreign importations, filled with the old-time ambition to conquer a new world, and some are a remarkable development of indigenous species. An obscure moth, butterfly or beetle, heretofore insignificant in its native haunts, strikes in upon our orchards, gardens or fields, and finding conditions favorable for rapid development, becomes a fearful pest, so suddenly that we might almost suppose it to be a new creation. Potatoes, squashes, cucumbers, melons, cabbages, turnips, and many other things in our gardens, would soon become extinct were they not protected by constant vigilance, and apples, plums, currants and grapes in

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the orchard, would probably share the same fate. We read in the Bible of the plagues of lice, flies and locusts in Egypt, and of hornets in India. These events were accepted by the people as miraculous in their origin, but we can see the same laws which prepared them actively at work to-day. Sections of our own country, equal in area to the productive portions of Egypt, might be, through similar causes, rendered incapable of feeding its inhabitants to-day.

A great element of safety to our country lies in its vast extent, covering so many degrees of latitude and longitude, that these pests are localized, and the abundance of our productions in one part can make good the destruction in other parts. Were it not that our country involves a greater area than is likely to be visited by any specific plague, we might live in constant fear of such famines as are now afflicting large localities in the old world.

It seems quite possible for some insignificant insect to exterminate the human family. In addition to these insect enemies, we have many obscure diseases affecting both vegetable and animal life, which are attributed to fungi, the spores of which float in the air, like the smoke from a puff ball, and strike root whenever they alight on a favorable spot. We have smuts, rusts, rots, blights, yellows, knots and mildews among vegetables, and deadly diseases of modern origin among domestic animals, so that the prospect is appalling, and may well challenge the attention of both the general and local governments.

The importance of entomological investigations is becoming more fully realized as the numbers and damage done by insects increases, and we have already had special commissions appointed by the government to investigate these cases. We have had the grasshopper commission. The insect has been fully described, his photograph taken in all possible positions, and his habits carefully studied, which is all very well, but what we want as the result of such labors, if we can get it, is a prompt and certain cure for these plagues. When our crops are being destroyed, and we are anxious to put a stop to it, it is no great comfort to read ever so minute a description of our enemy, following an unpronounceable scientific name, unless it winds up with a potent and

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easily applied remedy. We will remember, however, that these close investigations must be made, as preliminary surveys, in order to detect, if possible, a weak place in our enemies' defenses. The fact that the female of the canker worm is found to be wingless, has suggested a mechanical remedy which is sufficient for it, while the same remedy will not avail against species which have wings with which to fly over our breastworks. So with the codling moth, the habits of the larvæ when entering the pupa state, suggests the preparation of such facilities for his use, as can be made traps to destroy him. We cannot dispense with these scientific labors, and we may rest assured that specific remedies will be found by those engaged in them, if they exist.

The judicious use of poisons is frequently recommended for specific cases, and is found a sufficient remedy. Among those used in horticulture we find the following: Strychnine, arsenic, Paris green, hellebore, Persian insect powder, potash, carbolic and cresylic acids, a list of which for deadly efficiency might satisfy the ambition of Lucretia Borgia, were she living. In addition to this may be mentioned a long list of substances, which are found useful, but which do not rise to the dignity of active poisons, sulphur, whale oil soap, salt, ashes, soot, plaster, tobacco and road dust. The application of these and other remedies on an ordinary farm, where, in addition to the standard crops, gardening and fruit growing are attempted, requires the almost constant attention of an expert, for several weeks. The care is incessant, and a day's delay may result in the loss of all we have undertaken for the season with some particular crop.

I will enumerate some of the occasions where poison is needed. In the first place, as preparatory for a corn crop, the striped ground squirrel, sometimes called the gopher, must be promptly met, before he has destroyed the corn. To provide for them, soak a handful of corn until it is sufficiently softened, when, by pinching it laterally, the chit can be opened with the point of a knife, and a little strychnine inserted, when, by letting go, the gap closes and the poison is securely held. A few kernels prepared in this way, may be carried in one's tobacco box, while fitting the corn ground; and whenever fresh evidence of their work

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is found, a kernel or two dropped into their holes, out of sight of other animals, will prevent all damage from them. I generally take a red ear for poisoning purposes, so that the color warns me of danger.

Where woodchucks are troublesome, a few squash seeds prepared in the same way will effectually settle them. They are often very destructive in squash and melon patches, and unless a man is acquainted with their work, he will be at a loss to discover his enemy.

The next thing in order is the cabbage flea beetle. It is difficult to escape from it. They seem to exist in countless numbers on ground which has been a naked fallow, and I have gone into new clearings, and hoed up the dirt where large brush piles had been burnt, without escaping from them. They will destroy cabbage plants when first starting, in a day, and they will injure large ones when taken to the field from the forcing beds. They are not easily killed by poison, for they do not consume the whole leaf, but puncture the cuticle and eat out the substance. Something must be done, and it seems necessary to dress the plants with poisons and offensive substances. Paris green is the ever ready poison, and can be mixed with water or plaster. I sometimes use snuff, soot, super phosphate, sour milk, ashes, and road dust. I generally get enough plants through to answer my purpose, but not without loss. I wish that there might be a specific discovered for them.

Cut worms are always in season during the spring months, and the world is full of devices against them. They are sluggish in their motions and do not travel far. A summer fallow is a good preventive. They may be poisoned, for they devour the whole substance of the plant, but a good way is, to hunt them out and kill them. Bring one's head and tail together and squeeze, and it will be found a very good substitute for a fire cracker, with no danger from the fire. Plants may be protected by encasing the stems in paper wrappers, or by placing boxes or cans with the ends removed over them. When the plants are well established the worms can forage upon them without serious injury. Vine hills, which are often raised above the common level, can be pro-

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tected to some extent by cutting down perpendicularly at the side and scraping away the dirt, leaving the plants on a plateau with vertical or overhanging sides. After heavy rains they must be repaired.

Next comes the striped beetle. His habit is to feed on the under side of the young vine leaves, which makes it more difficult to reach him. There are mixtures which can be used to kill it, or frighten it away, but it is easy to injure the vines by their use. Paris green must be used very cautiously on the vine family. If plaster is but slightly colored with it, it will prove sufficient. The plaster itself, being gritty, is a protection, and it must be put on as soon as the plants are up. It will not do to wait until the beetle makes his attacks. He will sometimes start on the west side, and sweep across a patch in a day. A mixture of equal parts of soot and air slacked lime is very offensive to the beetles, but this, too, may be used to the injury of the vines.

Paris green and potato beetles are familiarly associated in our minds. The remedy can be applied wet or dry, but it should always be when the plants are wet with dew. Water will roll off from a dry leaf, but will spread over it when the dew is on.

The next occasion for poison was when we heard the monotonous cranchings which told us that our currant leaves were being devoured. A few years ago, currant enemies were unknown to us. We could stick down our slips, and with good culture, we felt sure of fruit; now our bushes have to be guarded or they will be exterminated. Paris green would be a complete remedy, but the fruit is set, we want some of it, and must run no risks. White hellebore seems to be a specific for all kinds of currant worms, and it can be washed off from the fruit, so as not to be dangerous to ourselves. I noticed in my own garden that the worms let the black currants alone. I do not know how long it may before some enemy will be found to raid upon them, but if they should prove exempt for a few years longer, it might prove very desirable to extend their culture. They have a peculiar taste, which is objectionable to some, at first, but a little use will overcome this, as it does with tomatoes and celery, and such acquired tastes usually become very strong ones. They have at

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the present time the fewest drawbacks of any fruit which we can try to raise.

The strawberry patch must receive occasional dustings up to the time of blossoming, as it is exposed to the attacks of several species of grubworms which eat the foliage; of leaf rollers, and doubtless new enemies are coming which it is well to meet half way.

The canker worm is in our orchards, and will surely destroy them, unless we shower our trees with poisoned spray. A weak solution of arsenic has been found effectual in this case. A barrel of it can be placed in a wagon and the trees showered almost as fast as the team can be driven along.

There are still many enemies which we cannot reach by poisons. They lay their eggs in the fruit itself, and pass their larval state in the earth. We must use bands for the codling moth, barbed wires or offensive applications for the borers, curculio traps for our plums. We must hang bottles of sweetened water in the branches of our trees, and we must burn decoy lights all about our premises by night. We must wash our trees with a solution of potash to prevent the blight, cut out the black-knot from our plum trees, and burn them, and dust our grape vines with sulphur to prevent the mildew.

The old radish fly, whose eggs hatch into maggots, which burrow around our radishes, turnips and cabbage plants, is as destructive as ever. No specific remedy has yet been discovered for them. I saved my early cabbages last year by keeping them in cold frames as long as possible, then hunting the maggots from the plants while transplanting them, and afterwards hastening their growth by good culture. Some years I have lost half of my crop; last year I did not lose a dozen plants.

The European cabbage butterfly, which we learn was imported at Quebec some nineteen years ago, has at last reached our vicinity, and did its first serious damage during the past summer. It commences on early cabbages, and goes on hatching brood after brood, until late in the autumn. In using poisons in this case, we are treading on dangerous ground, for they eat the same parts of the cabbage which we want for ourselves. Hellebore might do for the ear-

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lier broods, for as the cabbage grows from the centre, it is continually pushing away the outer leaves, but mineral poisons ought in no case to be used. I had collected a list of so-called remedies, as reported by different persons, but I find the thing so well summed up in an article by Cyrus Thomas, in the *Prairie Farmer*, that I will give his words. After urging the importance of catching the butterflies and killing them, and speaking of the saponaceous compounds of cresylic acid, as recommended by Prof. Riley, he adds:

"In addition to these remedies the following have also been recommended: drenching with hot water; sprinkling with salt; drenching with brine, with weak lye, with dilute carbolic acid, with decoction of elder, with decoction of dog fennel, etc.; dusting with hellebore, powdered lime, ashes, pulverized black pepper, meal, sawdust, road dust, etc.

"I tried the experiment of catching the butterflies with insect nets, and am satisfied that children from ten to fifteen years of age can soon be taught to do this with ease and rapidity. The butterflies move heavily and rather slowly, alighting, especially on cruciferous flowers. A small bed of early radishes here and there, allowed to run to seed, will attract them, and they may then be caught without running among the cabbages, which is one objection to this method of relief. But the efficacy of this method depends very largely on co-operation; for it is rather irritating to toil two or three days in the hot sunshine — for it is then they are most numerous — and as you think the enemy is about conquered, to see a fresh army pouring over the fence from your neighbor's garden, which is left to shift for itself. If a proper combined effort is made to capture the butterflies when they appear in the spring in a neighborhood, and are few in number compared with what the summer brood usually is, they may be so generally destroyed that with a little additional labor in destroying what worms appear, cabbages may be saved from injury.

"I tested by experiment most of the topical applications I have named, and found none of them to be effectual. They will eat with apparent unconcern, covered over with a thick coating of

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lime, ashes, or salt, and, according to Dr. Fitch, of hellebore. Of the liquid applications tried, the most effectual was a lye made by mixing strong ashes in warm water at the time used, and applying it in as large quantities as the cabbages would bear. Unless used somewhat carefully, it will discolor the outer leaves of the heads. Lime and brine were of no value whatever; elder decoction killed a few; other applications gave similar results. Adding my experience to that of numerous other persons throughout the state, who were experimenting, I am satisfied that no application yet suggested will prove of any real value as a remedy for this cabbage worm, which, though apparently so tender and delicate, is, in fact, exceedingly hardy and tenaceous of life, much more so than leaf-eating caterpillars.

"Although the list of materials tried is a long one, yet I am not prepared to say there is no topical application that will destroy the worm without materially injuring the cabbage. The fact that the species and its congeners have long been injurious in Europe without such remedy being discovered, renders the likelihood of such discovery doubtful, but is not conclusive. If some method of applying kerosene can be devised that will not injure the cabbage, it may be effectual. Dry, pulverized, cayenne pepper, if not too costly, might be beneficial. There are also numerous other substances that might be suggested, which I had no opportunity of testing, which it would be well to try."

As the increase in the area of our orchards and other fruits leads to an alarming development of the enemies which prey upon them, so the increase of these enemies develops forms of parasitic life which destroy them in turn, and herein lies, no doubt, our chief defense. The myriads of one year are sometimes followed by almost total extinction the next. We often read estimates of the numbers of eggs laid by an insect and of the possible millions which may develop from it in a short space of time. Such figuring does not amount to much practically, for such remarkable fecundity is a confession on the part of nature that the chances of destruction exist in about the same ratio.

The cares and labors which all these enemies entail upon us are very burdensome, and necessarily discourage the planting of

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orchards, fruit beds, and gardens, for unless a man becomes an expert in his horticultural knowledge, he will surely fail to gather much fruit. The tendency of the times is towards a separation of these various industries, and the technical knowledge necessary to success in any of the many branches of horticultural labor is such as to throw the most of these pursuits into the hands of specialists, who will make a profession of their callings.

I will say, in conclusion, that poison is a dangerous element, and should only be handled by careful persons. I would in no case mix Paris green or arsenic with substances which would make a bait for domestic animals, with the exception of the kill-sheep dog. It is sometimes mixed with flour or shorts, but land plaster is far cheaper, and is a fertilizer which may profitably be spread on its own account. I once used it on potatoes, and I could count the rows and the hills in the wheat, the following season, as easily as I could have done it, had the potatoes still been standing. The grit of the plaster, like that of road dust, is also a protection from the jaws of insects. Would not a sprinkle of emery dust be still better? Even with the most careful use of poison, accidents will sometimes happen. A man in Baraboo once borrowed a large kettle of a hardware merchant, in which to prepare poison, for some purpose. It was afterwards sold to a farmer, who cooked food in it for his cows; three of them were killed. A man had mixed some Paris green in water to take to the field. A friend called, and left the gate open. While they were talking, a cow stole in, drank of the water, and was killed. Another man mixed some with flour, for his potatoes. He set down the dish at the end of the rows; some calves crowded their heads through the fence, and ate of it; two of them were killed. I mention these cases, to increase the caution of all those who may be led to the use of poisons in horticulture.

In reply to a question how he would poison the woodchuck, Mr. Wood replied that they were very partial to squash seeds and vines, and often do great damage in the field. The only way in which he had been able to reach them, was by putting strych-

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nine in the seeds. You can soak the seeds, or use them dry. Raise the shell with the point of a knife, and put a crystal of strychnine in.

Mr. Jordan, of Minn. — Mr. Wood alluded to blight, but did not give any remedy for it. It is a subject which has occupied a good deal of my attention and study, and possibly the results of my experience and practice may be of some benefit to those here who have been troubled with it. I commenced washing my trees some eight years ago with lime and soft soap or lye, for the purpose of making them healthy and keeping the borers out. While practicing this my trees blighted the same as those of all my neighbors. Two years ago I saw that sulphur was recommended to be use in whitewashing trees to prevent the blight. I slacked the lime as usual, and was very careful to slack it in such a way that it would remain on the bodies of the trees. While slacking, I put in about a fifth part of sulphur, and thus make a paint; made it about the consistency of thick paint. Then I wash the trees thoroughly, letting the mixture run in around the cracks next the ground and up well into the limbs, filling the crotch full. I have practiced this for two summers. There are some gentlemen here who visited my place during the last year, who will bear witness that through our section of the country there is not, with the exception of my place, a garden or an orchard that has two Transcendent trees that have not suffered with the blight, while I have one hundred acres in orchard and not a Transcendent has blighted in two years past. A year ago this last summer not a twig of any kind blighted. This last season a little blight commenced in one corner where my man in slacking the lime, contrary to orders, had burnt the lime and it was washed off the trees early. I then had a sprinkler prepared, a duster rather, about the size of a gallon can, perforated on one side, and filled this with powdered lime and sulphur, and while the dew was on or right after a rain storm, dusted the trees that had commenced to blight, and the blight stopped and did not spread over my orchard. I have read a great deal on this subject. Mr. Purdy, of Elmira, New York, says in his *Recorder*, that the blight can be controlled with such positive certainty that it is only an evidence of shift-

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lessness for a man to allow his pear trees to blight, so I think it will apply to us who are trying to raise fruit trees. By and by, when we are passing a man's orchard and see his trees blighted, we shall consider it as great an evidence of carelessness as when we see his fences down.

Another man in the *Fruit Recorder*, says he has a specific for tree blight; copperas water thickened with lime or sulphur. If he thickens with sulphur, the result may be the same, but he don't question but that copperas itself may be a disinfectant. Some scientific men believe that blight is a fungus disease, possibly an animalcule fungus. What it is I am not prepared to say, but this is the result of my practice in the use of lime, and I think that every gentleman who is troubled with the blight will find it is worth trying, at least.

Mr. Wood — Mr. B. F. Adams gave us quite an exhaustive paper on the subject of blight at our convention last year, in which he gave us the result of recent investigations, and it shows at least that it is a very obscure disease, and is of very obscure origin, and that many theories propounded in reference to what causes it and its remedies, do not hold good long; but Thomas Meehan, editor of the *Gardener's Monthly*, of Philadelphia, who is high authority in all such matters, says absolutely that a wash of a weak solution of potash will prevent the blight.

Mr. Jordan — Will not strong lye mixed with whitewash have the same effect?

Mr. Wood — I think it would.

Mr. Jordan — Well, it does not.

Mr. Wood — It strikes me that while the blight appears in the leaves and the branches, putting a wash on the body of the tree would be like putting a wash on your foot for a sore finger. I should think the way would be to prepare a pump or a sprinkler and to throw the wash on the trees, and let it fall on the leaves. If this lime and other material applied to the body is effectual, how does it reach the leaves? If it should be by an emanation rising up through the tree, a little application on the top of the tree would certainly be good. We ordinarily know very near when this blight sets in. There is a certain murkiness of the air that makes us think of blight before it comes.

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Mr. Jordan — It generally follows muggy thunderstorms, and consequently the Germans often say the trees are struck by lightning.

Mr. Wood — I noticed the expression used was, "a weak solution of potash." It might be that a little of the solution sent over your trees would be cheaper, more quickly and easily done, and would accomplish the thing directly, while the application to the bodies is quite remote from the seat of the disease.

Mr. Jordan — The eating of the pudding is generally the test of the thing; and it is worth while for every man who is raising an orchard to whitewash his trees, for two reasons, aside from the blight. First, to keep the borers out. If you whitewash your trees thoroughly, letting the whitewash fill the crevice that is always between the tree and the ground, on account of the wind pressing your tree, you will never be troubled with the root borer, or the borer in the body or crotches. If you whitewash about the first of June, when they lay their eggs, they will not deposit them on a whitewashed place. Secondly, it makes the trees more vigorous, as well as prevents the blight.

Mr. Tuttle — This matter of blight has been before the world for a great many years. It appears sometimes to pass over twenty or thirty or forty years. No one has ever found a remedy that could justly be called a remedy. It is well enough to try this. I talked with Mr. Barry, of Western New York, a few years ago, and with John J. Thomas and Mr. Smith, of Syracuse, and Mr. Bunn, and they all agreed it was not a thing they knew anything about. They had found no sure remedies. It came and went. Now as to the idea that it comes at the times when we have great heat; I have seen blight in some of our coldest summers. Some of our worst seasons of blight have been very cold summers, and it is not confined to the fruit trees. We see it in the young oaks in the groves; young, thrifty, healthy trees. It is more fatal to the oak than to any other tree. I would not discourage the use of this remedy; it may be good; but the sprinkling of the trees is, I think, a more simple remedy, and one that can be more readily applied, and will come into common use a great deal more easily than washing with lye or whitewash. I believe that the

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application of an alkali to the tree is beneficial applied to the whole tree, branches, twigs, and every part of it; we can do this readily, and it will be better than to apply anything to the trunk merely.

The scattering of dry ashes when the trees are damp and before the leaves appear, is a complete washing. It does not do the tree any particular good to put soap on it. That is, the oil or grease in the soap is not what we are after. It is the alkali, the ashes; and if put on in the way I suggest, it will stick to the tree through the summer, and even the rains will not wash it off. It is necessary to put it on when there is not much air in circulation, when you can throw it from opposite sides of the tree. It will be a complete washing, not only of the body but of all the small twigs; and is an effectual remedy against the bark-louse. I have seen trees that were badly infested with bark-lice completely cleaned out by using ashes in this manner. I think that washing the bodies and limbs of trees may be good, but I believe it is better to wash the whole tree, and you can do that effectually by sprinkling ashes on the tree when it is damp.

Mr. Adams — Do you know anything about the application of linseed oil? I have seen, I cannot tell how many recommendations of it for the prevention of blight.

Mr. Tuttle — If pure linseed oil was used on the tree, either on the body or the limbs, I calculate that it would stop the circulation. If it penetrates through the bark, as it undoubtedly would, it will prevent the circulation of the sap, and, I should think, would injure the tree.

Mr. Jordan — At our horticultural meeting, two years ago, somebody recommended painting fruit trees with chemical paint, to keep rabbits off, such as we use for the roofs of houses and barns. I applied it and killed four or five hundred Wealthy trees. It taught me a lesson, so I put linseed oil away. The Transcendent it does not injure, but it kills the Wealthy. Let these gentlemen who are skeptical in regard to the use of sulphur for the blight, about the first of June, thoroughly whitewash their trees with lime and sulphur and try it thoroughly, then tell us next year what their experience has been.

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Mr. Philips — I want to talk a little about the blight. I presume I know as little about the blight as anybody else, and just as much, too. Brother Wood cannot see where the application of a poultice to the foot comes in for the cure of a sore finger, or an application on the trunk of a tree to cure the blight. Now, my experience is, that anything you can do to retard the growth of the tree retards the blight. A tree that is a free grower is the soonest to blight. Transcendents are charged with spreading the blight. If you can plant a Transcendent, and give it thorough cultivation, so that it will grow thriftily, and put another in sod ground, the latter tree will not show a particle of blight in five years, while the other will.

A member — Nor any fruit.

Mr. Philips — Yes, it will. There are men who claim that if you whitewash a tree, paint it, or put anything on the bark of it, you injure the circulation and retard the growth, and that the bark should be washed clean, and have a chance to grow. My impression is, that if you daub this whitewash on thick, you may possibly retard the circulation, and so stop the blight. Why is it that a tree growing in the sod does not blight, and another one growing a rod from it does? They get the same atmosphere, the same circulation of air, and the same summer showers, and how do you account for it? So with this matter of the whitewash. I can account for its preventing the blight in no other way than that it retards the growth of the tree.

Mr. Jordan — I would say that the whitewash does not retard the growth of the trees. I have been whitewashing mine for eight years, and a more healthy orchard cannot be found. One gentleman who had whitewashed his trees told me it made them grow faster.

Prof. Daniells — It has been said that the Persian Insect Powder is a poison. It is not a poison to anything but flies. It is the flower of a particular species of plant that is pulverized. I mention this that no one may be prevented from using a most excellent remedy for flies. There is no danger whatever in its use. It is made from the petals of a flower ground very fine. This flower grows in Palmatia.

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SHALL THE FARMER CONNECT HORTICULTURE WITH FARMING?

PRESIDENT J. M. SMITH, GREEN BAY.

Mr. President, Ladies and Gentlemen: — If you will turn the pages of history with me for a short time, we shall find, that as a general thing, the cultivators of the soil, the men and women who raised the bread and meat to feed the human race, have not been the ruling class. In fact, as we grope our way into the dim and often terrible history of our race, we shall find our own class, although constituting a very large proportion of all ages and nations, were among the lower classes and orders of society, often mere slaves of the soil, to be sold either with or without it, as the whims or passions of the haughty lords or aristocracy of the time might dictate. The real *owners* of the soil have always been held in respect by the rulers of nations in all ages. But it must be borne in mind that the owners and the *cultivators* of the soil have, in the past, and, in fact, do at the present time, in most of even the civilized portions of the world, constitute two entirely distinct classes. Such is the case in Great Britain to-day. The British government is controlled by a rich land aristocracy. The same was true in France until the French revolution broke up the entire system of large landed estates, and almost annihilated their then proud and haughty owners. In Russia, Germany, Austria, Italy, Spain, and, in fact, nearly all other European States, the same state of affairs, or something very similar, exists and prevents the real cultivators of the soil from becoming what they ought to be, and what in this country they certainly will be in the not distant future, the great power that will dictate and control our country's destiny.

If this class are to control the future destinies of our country, and I think I need go into no argument to prove it, the question what manner of men shall they be, is a very pertinent one. Never in the recorded history of the human race has there been such an opportunity offered to the cultivators of the soil as is now offered to the farmers of this country; and this remark is peculiarly true of those in the west and northwest. They compose a

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large majority of the entire population. They, in almost all cases, own the soil they cultivate. For fertility of soil, healthfulness of climate, and general capabilities of supporting an immense population in comfort and happiness, it may well be doubted, whether there is another district of country, of equal size, upon the globe that is equal to our great northwest. With the ballot in their hands, to either make or unmake men at their will, to improve or to ruin the government at their pleasure, the question again returns to us what kind of men shall they be. Shall they be mere growers of wheat, corn, oats, horses, cattle and pork? Shall they be of the class who go upon a piece of rich land and impoverish it in the shortest possible time, and then leave it to repeat the operation elsewhere, as by far too many have done in the past, and are doing at present? Shall they be of the class who build their homes upon the open prairie, and live there for years with neither tree, shrub, bush, flower, or even a little lawn of God's green grass to relieve the monotony of the scene about them? You may have barns overflowing with grain and the produce of your fields; your horses may be of most approved breeds; your cattle fat, and well cared for; your pork, of the best; your house large, and perhaps your parlors, well furnished, but without a home.

Homes, real homes, in the true sense of the term, are to-day one of the greatest wants of our western farmers. The farmers own their lands; they own the buildings that stand upon them; yet it is an undisputed fact, that in hundreds and thousands of instances they will sell these so-called homes, gather together their household goods, and move away from them with about as little reluctance as the Bedouin of the desert, who camps where night overtakes him, and leaves in the morning without a thought or care as to whether he has ever before or ever shall again see the spot where he has rested for the night. These things ought not so to be. Do you ask what shall be the remedy? I know of nothing that will be so likely to arrest this moving and changing from place to place, as to awaken an interest in horticulture upon every man's farm, no matter how large or how small it may be. I do not propose it as a money making scheme; the El Dorado

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where every man is to make his fortune; neither do I believe it will be a scheme whereby the farmers are to lose money. I shall advocate it at this time only as a means of making homes more pleasant, more comfortable, and very much happier, and in every respect much more desirable. I advocate it as a means of making better and more refined men, women and children.

Suppose that two young men, with their wives, purchase a piece of land near each other, and about equally good, with the intention of making homes for themselves and their families. We will suppose them to be fairly educated, honest, industrious, full of energy, and both of them determined to have good farms, and to be known as good and enterprising farmers. They are men of (as most of our new farmers are) small means, and are obliged to run more or less into debt in making their necessary purchases. We will designate them as Mr. A. and Mr. B. Mr. A. says to his wife, "limited as our means are, we must have a few plants and shrubs, a few fruit trees and vines, and you must have a few seeds for flowers and ornamental plants. I will go to the forest and get a few trees to set for shade about our home in the future." Of course she agrees with him. A piece of land near the house is selected. It is laid out in such a manner that nearly all the cultivation may be done with a horse and plow or cultivator. Only a few of the most hardy varieties of apples are indulged in. The Tetofski and Red Astrachan for early, the Duchess of Oldenburg for fall, the Fameuse and Golden Russet for a later supply. A few grape vines must be set, not less than eight feet apart each way, remembering, for the present, that land is cheaper than labor. Of these he needs a few Janesville, as they are very hardy, good bearers, and very early, ripening in the central portions of this state about the middle of August. Then comes the delicious little Delaware, the Concord, the Massasoit, the Agawam, which, if properly cared for, will give our young friends a constant supply of this, the most noted and ancient of all the fruits of recorded history, from the middle of August until New Years, and, if carefully kept, much later than that. A little spot must of course be devoted to strawberries. To be sure of a crop, he gets a few of Wilson's Albany Seedling, a variety that rarely fails to yield well

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when it has fair cultivation, and they are set three feet apart each way. This will give plenty of room for the horse and cultivator. A few Kentucky, to lengthen out the season, is all that he will risk until he has more both of time and money than he is likely to have for a few years at first. A few raspberries of the hardy varieties, like the Doolittle and the Miami, set six feet apart each way, and a few Kittatinny blackberries, set in the same manner constitute his stock in this line. A few bushes each of the old Red and White Dutch currant, set not less than six feet apart, will constitute his entire stock of currants.

Then comes the garden. This must be regularly laid out, and in such a manner that the greatest possible amount of the cultivating can be done with the team. Still there are some things that must have the hand cultivator. In this list, our young friend will find his early radishes, the French Breakfast and the Covent Garden, which will need to have a little sowing made of them as often as once every two weeks, as long as the family care for them. The Early Bassano beet for the first early, and the Blood turnip for a later and winter supply. The early peas may be sown in double rows, three to four feet apart, and cultivated with the horse and plow or cultivator. Parsnips may be sown in rows two feet apart, and cultivated in the same way, care being taken to put in a large supply, as no root crop is equal to it for milch cows in early spring. A few of the Jersey Wakefield cabbage for early, and plenty of either the Fottler or the Premium Flat Dutch, for a late supply. If there is no hot bed, as there probably is none, a few tomato and pepper plants must be started in a box by the window, with a second one containing a few nice Jersey Wakefield plants for the early cabbage just mentioned. A dozen Early York tomato plants, and as many as they choose of either the Trophy or the Acme, for a late supply. If there is an extra stock of them, they are worth all they cost for the cows that are giving milk.

Some Early Rose potatoes must be planted as soon as the season will admit. For sweet corn, the Early Minnesota, for the first early, the Crosby or the Concord, for the second, and the Stowell's Evergreen for the main crop. If all are planted at the

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same time, they will come on in such succession that there will be a constant supply through the season. All these they will plant in such a manner that the horse and cultivator will again come in play. The Early Cluster and the White Spine cucumber, the White Japan and the Hackensack, Nutmeg melons, and the Mountain Sweet watermelon planted six feet apart each way, are easily cultivated.

An asparagus bed must not be omitted, as this is a crop which, if well prepared for in the first place, needs only reasonable care to make it a source of great pleasure to a family for many years. The place selected is one where it can be permanent, as removal is an extremely difficult thing to accomplish. The place selected is about twelve feet wide and twenty-five feet long, well drained, deeply plowed, heavily manured, and one year old roots of Conover's Collossal, set not nearer that two feet apart each way. They set them with the crown of the plant about six inches beneath the surface, spreading the roots out in every direction, or in as near their natural position as is possible.

Their garden is all planned at last, but where are the flowers to come in? And how in the wide world is time to be found to plant and care for a bed of flowers, even if they are only the common varieties, and such as any one can make grow? Well, I will reply in the words of a lady friend, the wife of a farmer of limited means and many cares, and confined much of the time for a number of years to her sick bed: "Time must be found for a few flowers. We cannot get along without a few;" and while lying upon her sick bed, she selected the seeds and bulbs, and told her little sons how and where to plant them, and afterward how to care for them. They grew, of course, and I never saw finer specimens of some varieties than grew about her house and home, although she was unable even to pick, much less to care for them. And so I will say here; our young friends must and will find time and a place for a few; a very few at first. A lilac bush, a snowball, a flowering almond, a few common roses, a few tulips; also a little bed filled with pansies, portulaccas, verbenas, and phlox drummondi must constitute about their list for the present.

But while all these things are being accomplished as best they

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can be, and not interfere with the good management of the farm, our friend Mr. B. comes along, and looks over the ornamental part of the place, as he terms it. After looking it all over, he says: "Well, neither you nor I have money at present to spare for this kind of work. It is true it will make things look nicer about your place, and you will probably get some little fruit in time that will be pleasant to have; but you will make no money out of it. As for myself, I intend to put all my means and all my strength into the main business of the farm. I intend to have good crops of grain, good cattle, good hogs, and, in short, I intend to make some money just as quickly as possible. After I get out of debt and get money to spare, I intend to build me a new and larger house, and then I will set out fruit trees, and shade and ornamental trees. I will then have small fruits and flowers, as you are preparing for now, though I will have them upon a larger scale than you have arranged for at present."

Such is their commencement upon their farms. The years roll by. Neither of them are exempt from the cares and toils, or the ills and misfortunes that beset others in a like vocation. Though both work hard and are reasonably prosperous, it soon becomes apparent to both, and more especially to the children of the two families, that there are particular attractions about the home of our friend, Mr. A., that do not exist upon the farm of Mr. B. This difference shows itself with great regularity about the commencement of the strawberry season, when they are sure to come with the word that "Mamma wants to buy a few nice strawberries, and will not Mrs. A. please to let her have a few roses for a bouquet, for mamma expects company to-day." These errands continue to be made at short intervals, until Mr. B. comes and says, "Neighbor A., I wish you would let my family have berries and fruits as they need them, and when the season is over, I will let you have something from the farm that you need, or pay you for them in some way. I ought to have had such things myself, and have always intended to have them, but when the season for setting plants and flowers, etc., comes around, I am always just as

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busy as I can be, and, somehow, I never find time to do it; but I must try and do it next spring."

The next spring comes and passes by as the preceding ones have done. He is again too busy to attend to fruits and flowers. As the years roll by, sickness comes to their families, as well as misfortunes to their crops. The late spring frosts blast their tender plants. The summer drouths wither the wheat and the corn. It is hard times with our friends. We all know the meaning of the term. As their little ones suffer upon beds of pain, the supplies of fruit and flowers have a value that they have never before known.

To some, the idea of fruit in cases of sickness may seem strange, but it is now a well known fact, that good ripe fruit is, in thousands of cases, much more desirable, as well as more beneficial, than the most skillfully prepared medicine can possibly be. A few years since, after one of our own boys had been given back to us, as it seemed from the very borders of the spirit land, he almost lived for weeks upon Delaware grapes. A year or two since, while visiting a friend who was dying with consumption, I asked him if I could do anything to make him more comfortable. He replied, "There is nothing in this wide world that would add so much to my comfort, as a dish of strawberries fresh from your beds." I told him he should be remembered with the first dish of ripe berries that I could pick from them. Years ago a friend who was recovering from a long fit of sickness, said to me in early spring, "Will you not do without your first dish of asparagus yourselves, and let me have it? Charge me whatever you like, only let me have it fresh from your beds." Such cases might be multiplied almost indefinitely, but it seems not to be necessary.

Our friend Mr. B., during the sickness in his family, receives another lesson regarding the great value of the things that he has never yet had time to plant or cultivate. Again he resolves that he must and will have the comforts of fruit and flowers. But now come purchasers for their farms. The prices offered are very fair, and our friend B. concludes to sell his farm and purchase a

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new and larger one. The wife does not seriously object, but stipulates that there shall be more attention paid to the comforts and adornments of their new home, than has been bestowed upon their present one. Still, tears of regret will come as she visits for the last time the place where some of her dear ones sleep in the silent city of the dead. She thinks of the brilliant hopes with which she first entered upon farm life, what a beautiful home she had hoped for, and how she had been disappointed. She resolves to make a new and vigorous effort to have their new home one that shall indeed be a place of rest and beauty, for both herself and the children that remain to her. Still she cannot help fearing for the result, for she, with her keen perceptions, has noticed that her husband is gradually becoming more and more devoted simply to making money, and as a result, more indifferent to the real comforts of his home.

To our friend Mr. A., and his family, the thought of leaving the home where they have toiled together for so many years, where they have shared each other's griefs and each other's joys; where the shade trees, set by their own hands, where the fruits and the flowers, and the beautiful lawn, are all speaking to them in their silent but expressive language — Do not turn us over to the hands of strangers,— is indeed a serious question, and one not easy to decide. As they talk the matter over together, little Fred comes and says, "Papa, will we have nice strawberries and things in our new home? 'Cause if we don't, Joe and me are going to stay here, and pick some nice berries and take them over to Mrs. Pierson's, and she will give us some biscuit and butter, and then we will have strawberry suppers along with her little Kate and Elsie, like we did last summer, and have lots of fun." Little Emma nestles close to her mother, and says, "Mamma, if we go 'way off, who will take care of the white rose bushes over little Warren and little Mary's grave, and who will carry flowers and spread over them, in the summer time?" Tears will come, as they think of those sad days when they followed the little ones to their resting place.

They take another walk over their farm, they speak together of the improvements of one field after another, and then return to

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the beautiful lawn and the shrubbery that surrounds their home. No! they will refuse the offer for their farm, and remain upon it, and try to make it a home of beauty and comfort, not only for themselves, but for their children that are still spared to them. Such is their resolve, and as year after year passes by, new and better improvements are added to their already pleasant home. A new house, larger and more commodious, takes the place of the old one. New and larger barns and outbuildings are built to accommodate the larger and constantly improving stock of cattle, horses, sheep and swine that are yearly adding not only to the value of the farm, but to the bank account as well. But no matter how much he may improve his general system of farming, you may be sure that he will by no means neglect to beautify and adorn his home with new and rarer plants, shrubs and fruits. A much larger annual income from his constantly improving farm gives him the means to add each year something not only new, but useful as well as ornamental, to the home to which they are yearly becoming more and more attached. Books, papers and magazines, treating upon these and kindred subjects, have become an absolute necessity. A modest library of useful books is found upon his shelves. In short, this addition of horticulture to the heavy and sometimes very exhausting labor of the farm, has not only elevated and refined the family in this one respect, but it has created a desire for refinements in other departments of life. They must study more and read more; they must become better farmers, more progressive, more ready to adopt any improvement that will add to the value of the farm, or to the comfort and happiness of their now beautiful home.

It is sometimes said that the farmer can lead a life of independence; that he is not dependent upon anyone for his bread; that the financial storms that convulse the commercial world, and shake the strongest firms from their foundations, and scatter their fortunes to the winds, need not trouble him. I do not believe this is true; neither do I believe it would be well, if it were true. But this much is undoubtedly true, that of all the occupations followed, either in this or any other country, there are none that are so well calculated to make a man and his family truly elevated and

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refined, in the broad sense of the term, and none that will make him so near independent in the world as this. "But," said the owner of a large farm to me, not long since, "see how you live in the city. We farmers cannot afford it. We should be bankrupt the first year, if we attempted it." Let us see about this. We must again refer to our friend Mr. A. He is surprised at an intimation that himself and family do not live well, and replies in the following language: "It is true that in the early days of our farming we often felt that it was necessary for us to deny ourselves some things that we much desired. We occasionally sold some of our fruits and vegetables, when it seemed to be an absolute necessity, for the purpose of obtaining other much needed articles, and in this manner we have realized many dollars, although we never followed this as a means of making money. But for many years past, we have believed and acted upon the belief that nothing that can be made to grow upon the farm is too good for our own family. The best of the grain, beef and pork, the best of the milk, butter, poultry, eggs, etc., are reserved for our own use.

"In addition to these, there is not a day in the year that we do not have a full supply of both fruits and vegetables, each fresh in its season, and then preserved fresh, or otherwise, for use until another season brings with it another crop, and another year's supply. It is true, that we have not a great many thousands drawing interest, but my farm, stock, orchards and fruit, are all in splendid condition, our house is both beautiful and pleasant, and there is nothing that we need, that we cannot have. In short, we have tried to take good care of our farm, and now we have no fears but that it will take good care of us in our old age." Such is the condition of Mr. A. and his family as old age overtakes him.

But how about our friend Mr. B.? After his removal upon his new farm, he finds no more time to add to the beauties or the comforts of his home than he did upon the first one. He condemns both himself and all about him to an unceasing round of hard work. The new farm is to be put in good condition for crops in the shortest possible time; and, as a result, the

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labor is hard and often disagreeable; the boys begin to think of other and different homes as soon as they get a little older; the wife is fast becoming discouraged and is silently resigning herself to a life of unbroken and ceaseless toil, and a home the reverse of what she had once so fondly anticipated; the daughters, warned by the pale face, and the premature old age of the mother, have ere this decided that they will never marry farmers. The second farm is conducted in about the same manner as the first one was, and with the same result. A purchaser makes his appearance with the ready money, and the second farm is sold. The almost disheartened wife makes another and a last effort to have more of the comforts and luxuries of life, as they are now in good circumstances. She informs the husband that their children will surely leave their homes, unless something more than the ceaseless round of hard labor is prepared for them, and that they will be left alone in their old age, if indeed they are permitted to reach it. A vague promise that these things shall be attended to in the future is all that can be obtained, and they move to another new home. Of course no time is found for ornamental work until everything else has been well attended to, and such a time never comes. One by one the years pass by. Old age comes, and the weary wife lays down to die, with the sad feeling that though she was the wife of a man whom the world called a rich farmer, and one who had not intended to be either a bad citizen or a poor husband, he had been a success in neither. She had been his wife for many years, and had seen him grow more and more eager for money, and less disposed to use it for the comfort of his family or the adornment of his home, until she felt that she was dying without ever having had, in the true sense of the term, a home. Although a family of children had grown up about them, not one of them was present, either to care for her or to receive her parting blessing. The husband soon follows the wife, and they sleep side by side. The children, with sad hearts and unpleasant memories of days that are past, return to the now dreary home. What shall they do? None of them want the farm; it is run down and out of repair. They say that father always let his farms run down on his hands,

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and that he lived a life of such intense and continued hard labor, they do not like his example, and will sell the farm, and try and make their living in other ways and places. The farm is sold and the children are scattered, with many unpleasant recollections of a home that needed only suitable horticultural surroundings to have made it a source of delight to the weary, pale-faced mother, as well as unmingled pleasure to themselves.

Once more for a moment let us turn to the home of our friend Mr. A. Old age finds him a grand and noble specimen of manhood. His many years of study of the good, the pure and the beautiful about his home, has made him a better farmer, a better husband and father, a better citizen, and in all respects a better example of that noble class of men upon which our government and our new world must depend for its support. It is true that he has never been a governor of his state, nor has he ever had a seat in congress. Still he was better fitted for either position than the great majority of those who obtain them. But old age does its work, and kind friends bear his remains and lay them beside those of the wife who went before, and whom he loved so well. The children with their wives and little ones return to the home of their childhood. But they feel that there is nothing to mourn over. Two beautiful lives have passed away. They were full of years and of happiness. The results of their life work is, partially at least, spread out all about them. Shall the beautiful home of their young and happy days be sold to strangers? No! is the response from one and all. Fred and Joe are both ready to buy out their brothers and sisters at its full value. Fred's wife, who is the little Kate for whom he threatened to leave both father and mother even in early childhood, joins in the request that Fred and herself shall have the farm, saying, that although their parents are not the ones who gave her birth, yet she loves them, and their memory will be as sacred to her as if she had never known any others.

"Let us have the farm, and we will care for and protect these noble elms that our father planted before any of us were born. We will keep the orchard that cost so many efforts and so many years to get one that was adapted to our soil, situation, and climate.

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The flowers that our mother tended shall be my care. The roses she loved so well, shall still bloom over the spot where her body rests. At lest once in each year all the family shall gather at this dear old home, and we will recount our joys and our sorrows together, and you shall tell us whether or not we are worthy to have the beautiful home of such worthy parents." Joe's wife, the little Elsie of whom we have heard once before, says that she will consent to this arrangement only upon one condition; and that is that her husband shall have the liberty to come there every year and get strawberries for her; and they must be as good as those he used to bring her when she was a little girl, which in her estimation were much better than any she ever received from any one else either before or since. All is amicably arranged, and Fred and Kate keep the old homestead. Originally it was only an ordinary farm; but the early and constant care of the horticultural department of it, in connection with the general farm management, has made it a truly beautiful, as well as a truly desirable home.

In this sketch of a home, I have endeavored to draw only such an one as the common farmer may and ought to have. Friends, which of them shall yours be most like in the future? If our northwest is to be truly prosperous for any considerable length of time, it must be made so by having an almost countless number of moderate sized, well cultivated farms, with homes made beautiful by their surroundings, as well as comfortable by their homelike arrangements within. Homes to which the owners will be attached, and from which they will not readily part. One of the greatest dangers that now threaten some portions of the northwest, is the immense tracts of 20,000, 30,000, 50,000 or more acres of land, swallowed up in single farms, and these being exhausted as fast as Yankee skill and ingenuity can invent ways and means of accomplishing the purpose. In such districts of country they can have neither good roads, good schools, good churches, good society, nor comfortable homes. The land, rich as it is, will be impoverished and left a comparative desert, and in the future, some good men must spend a large part of their lives in restoring to these places what has been unjustly taken

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from them. Gentlemen, is it right for a man thus to virtually destroy a township of land for the sake of enriching himself? I suppose there is no legal statute against it, but it seems to me that there ought to be at least a moral one. I have no right to dictate to others, but I should be very unwilling to have it said of me when I am gone, that he left his family rich, but he almost ruined a whole township of land to do it. Rather let it be said: "He had a pleasant home, a pleasant family, and pleasant surroundings. It was made more and more homelike to friends and neighbors as time and means permitted, and we may truly say that there is at least one little spot on the earth that is better and more beautiful on account of his having lived upon it."

Mr. Wood — As I have listened to this paper by President Smith, I have felt the essential truthfulness of the picture which he has drawn; and though he has named the parties Mr. A. and Mr. B., we can find their parallels in our everyday life. The aim of the address is evidently to induce men to make their homes so agreeable and pleasant that they will become attached to them, and thus check this restless spirit of immigration. I listened to his address, and realized the fact that, probably, there is not a man in this room forty years old and upwards who is not himself an emigrant, and who has not found it to his advantage to have been one. I have tried to determine how far this process of emigration may be carried on, and still be profitable. When this country was first settled railroads were unknown in the west, and the country was settled by people who took up small tracts of land on which they purposed to make homes. Wisconsin and Illinois are essentially a land where people came to make homes; and the thought came to my mind, that as long as persons finding themselves under adverse circumstances go west to make homes, this spirit is not so much to be deprecated. We know that New England has lost by this process, and that while it once was the home of much that was thrifty, excellent and noble, and perhaps never can recover the position it once maintained, yet the gain is greater than the loss, and therefore not to be regretted.

Since the railroads have increased through the west, and the

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countries beyond are being settled up, this same law of emigration for the purpose of making homes is not so general. We read of bonanza farms where men go, as President Smith has remarked, and take a township or more, just for the purpose of sweeping off the wheat which they may gather for a few years and make money out of it, ruining it or injuring it for homes.

I do not believe that the results of emigration in the future will be as beneficial as in the past; and that it is desirable to foster a spirit among our people by which they will become attached to their homes, and settle down into the idea that they will remain there, and possibly their children after them.

The strength of a state consists in the intelligence and patriotism of its inhabitants, and the very nature of patriotism is, primarily, love of home. This is the root of the love of the state. We know that a people who are not patriotic, who do not love their state, their land, do not give strength and character and position to the state. Mr. B., farming as he did, gained no attachment to the spot on which he lived. If we go on to a place and set out trees, plant shrubbery and orchards and flowers, we become attached to it, and this ties us to the spot where we live. A man will not willingly leave a place which he has ornamented by setting out trees and flowers. He will remember as he gets old, that he went into the woods here and there and dug those trees. I remember a fine tree in Sauk county, fifty feet high, that I once carried in my hand, and I never can see that tree with indifference. The more such ties we have, the more we love our homes, the better citizens we become, and the stronger the state becomes.

Mr. Smith — Perhaps I did not make myself thoroughly understood. I do not wish to discourage emigration, for I am a carpet-bagger myself.

Mr. Gill — I have attended these meetings three times and have derived great benefit from the papers read and discussed, and would like to have every one else share the same benefits, but the great difficulty is to get the men here who most need instruction. I have tried to induce some to come, but they are always ready with some excuse. I know that coming here has induced me to cultivate my garden to a much greater extent than I should have

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otherwise done, and that my family have derived much enjoyment from vegetables and fruit that they never would have had if I had not attended them. I have a good location for grapes, and as my boys had grown up and could attend to the work, I thought I would like to see what could be done raising grapes. While here, I heard the subject discussed and found out how to cultivate them, so in the spring I set out twenty-eight vines, and now have an abundance of fruit for my own family, and have given away considerable to my neighbors. I also have a good strawberry bed and a large number of current bushes and raspberry vines, but this is only what every one should and could have, if they will only try. Every farmer could have a good garden, if he would only set out for it.

UNDEVELOPED RESOURCES.

A. L. HATCH, ITHACA.

The object of the Wisconsin Agricultural and Horticultural Societies is to advance the interests of agriculture and horticulture. In pursuance of this object, we meet here in convention to consider ways and means to develop our resources as farmers and fruit growers, as tillers of the soil, as husbandmen of flocks and herds, as cultivators of orchards, vineyards and gardens. As the management of these societies has been reasonably consistent with their object for the last ten years, and as their transactions have been freely published from year to year, it is quite probable that we have the same subjects before us that have already been discussed and placed on record. If we now occupy the same field of study, it would seem that the best words have already been said, and the best thoughts already printed, and that there is nothing new to talk of. If there was no progress in rural labor, if the best methods had already been found out, if we knew what they were, and if we all operated with these best methods, then this seeming would doubtless be true. Fortunately, however, there is progress among us, and unfortunately the best methods are not all found out, and, more unfortunately, we do not all know them if they are, and, much more unfortunately, we do not

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all practice even what is already known of progress and improvement. Therefore it is eminently proper that we discuss whatever will improve our circumstances as producers.

We presume that these conventions are held mostly to promote the interests of that very large and respectable class whose chief business in life has been to get a living. It is very probable that this business centers in the one idea of home and home making. Our ideal of a home is one of developed luxury and refinement, supported by ample resources, produced, established and sustained by intelligent, cheerful and productive labor. To such life purposes, the most important subjects to consider are those of undeveloped home resources, or such as enter into the every day labor of whoever owns a home or a farm, an orchard or garden.

New resources may be added to those we already enjoy by simple discoveries, like that of the production of sugar from ripe sorghum. Other resources may be developed through nature's facilities, as they are found in the great cranberry marshes of our state, aided, of course, by skilled management. Still other resources may be developed on account of peculiar and favorable sites that the varied surface of our state affords. As example of this, we would cite the probabilities of successful fruit culture along the high lands just north of the lower Wisconsin Valley. We have heretofore reported to the Horticultural Society the peculiar freedom from frosts experienced along the Wisconsin Valley. Also the advantages of high lands in this respect, giving a difference of six to twelve degrees in extremes of cold in favor of the ridges. It is very probable that there are sites combining the advantages of both the Wisconsin Valley and these high locations, where the peculiar contour of the surface is such as to carry the valley temperature up the bluffs by the prevailing southwest winds. In such places there may be some wonderful fruit growing resources now undeveloped. The fruiting of about one hundred and fifty kinds of apples in Richland and Sauk counties last season shows conclusively that there is still a large field of possibilities open in our state for apple culture.

Another element in the development of resources is found in

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improved methods of procedure. Whenever, or wherever, improper methods are practiced there will be more or less want of development of what should contribute to the support, comfort and pleasure of the people. There is a desire to improve every known method, and many radical changes have been made in agriculture within the last few years. The sickle and scythe have rapidly yielded to the harvester and mower, until much of the drudgery once performed by hand is now performed by horse and steam power. In dairying, the factory plan has revolutionized old methods and developed new implements, machines and processes. Our former notions of the proper way to make butter have been wonderfully changed by the introduction of the deep setting plan for getting the cream, until we may almost wonder if there is any known process of making anything that is exactly right. All the changes may not be improvements, but still, there will be possibility of improvement, until the chemists furnish us a magic wand that we may plunge into the milk, and "presto change!" there is your butter in pound rolls or your cheese ready for market! In agriculture, new processes give interest to almost every part of it. In horticulture, new varieties, needing peculiar treatment, always lend a charm to its study. So whichever way we turn, the spirit of improvement requires constant study at our hands, that we may understand the philosophical principles underlying our chosen avccation.

As severe and trying as our climate appears to fruit growers, there are, nevertheless, some principles connected with it that makes hopeful the development of one of the most attractive branches of fruit culture. Grape culture has long ago been demonstrated to be practical in Wisconsin, and considerable quantities and a large variety are now grown. With varieties ripening reasonably early, like the Delaware, our climate affords some advantages over more southern ones. These advantages are summed up as follows: 1st. We have more hours of sunshine during summer than they do further south; 2d, our winter frosts pulverize and improve the soils; 3d, many injurious insects are destroyed here by cold; 4th, the extreme heats of summer are very favorable for grapes; 5th, our high ridges, having a compar-

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atively dry atmosphere, free from excessive dews and fogs, and having congenial soils and slopes with immunity from untimely frosts, present excellent sites; 6th, by winter protection, vines are secure from extremes of heat during winter, that sometimes start buds prematurely further south. This matter of winter protection, so much of a bug-bear to some, is a matter of security and insurance to the professional grape grower. It can do no harm to repeat here what is well known concerning grape culture in Europe. A recent writer on this subject says: "The tradition of the wine countries of Europe is, that all their grape vines came originally from Italy, south of the Alps; yet far the best and most abundant crops of grapes are now grown in the countries north of the Alps. The most precious of all, the Tokay, is grown in Hungary, where the mercury sometimes freezes, and where it is necessary to cover the grape vines with earth during winter."

Next, after we understand the philosophy of things, we must give good management to whatever we undertake. As friend Stickney tritely expresses it, "it is probable that many of us know better than we do." If so, then we should listen to the successful men, learn their methods, varieties, circumstances and successes, that we may catch inspiration from their words, and that they may infuse some of their enthusiasm into us to spur us to action. We should do this that we may systematize our methods, and especially that we may begin right. We can not all know everything at once, and we may be at fault in the simplest matters. At the convention here last year, Hon. Hiram Smith acknowledged that until the previous eighteen months he had not known how to churn butter properly. As a leading dairyman, this was an admission of importance, and shows that it is possible for us all to learn. In our own experience, we have an example of ignorance in fruit culture, that as a nurseryman and fruit grower has caused us much loss and annoyance. Until within the last year we did not know how to manage raspberries to grow them as they ought to be grown. We let the first growth of bushes bear too much, and the plantation never recovered for years. We could not keep the bushes in place, the wind would

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break them down; we had great trouble to cultivate them, the bushes were in a terrible snarl, and some seasons we lost lots of fruit because the bushes rested on the ground. We staked the patch at a cost of five dollars, and had our labor for our pains, and no profit in the fruit. We cut and trimmed and slashed, and still they were not satisfactory. We let them grow as they would some seasons, and some of the immense bushes were quite immature and winter-killed. We were told to pinch the tips of the new growth to make them branch so they would support themselves. We pinched them, and they grew immense branches and all went over in a worse snarl than before. Instead of being a resource to us, this patch of raspberries was altogether an item of expense, probably it was an *undeveloped resource!* We got to be somewhat ashamed of it, and didn't want any one to ask us how to grow raspberries so that the bushes would support themselves, and so they could be cultivated as easily as corn. At last we learned that we should not only pinch off the tips of the new growth, when about two feet high, but we should also pinch the tips of the branches when a few inches long, so they would re-branch. This plan would give us a bush that next season could be trimmed to support itself.

If our trees, plants and vines yield less than those of others, it is probable that our cultivation may not be as good as it should be. We have grown strawberries at a cost of less than fifty cents a bushel. Hundreds of bushels per acre have in some instances been grown, and it cannot be denied that there are thousands of chances just as good, and it is certain that the great development of resources in the soil comes from good management, good varieties and good cultivation, and good cultivation and management must come from intelligent perseverance.

Mr. Gill — I would like to have the gentleman give the best manner of protecting raspberries in winter.

Mr. Hatch — I raise only the Clark raspberry; I dig away earth on one side, near the canes, then bend over and cover with dirt, and protect with litter outside. The best authorities and the best results I have had, is to cover first with earth, to exclude

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the air, and then protect with some coarse litter outside. Snow is a good protection. But if you don't have snow, and it thaws and freezes all winter, in the spring, you may find your vines smothered to death.

Mr. Field — You don't want to mulch so much but that the air can get to the vines.

Mr. Hatch — First exclude the air with the earth, then protect the earth from becoming air-tight, by covering with litter outside. You will lose your plants if you cover with earth outside and it freezes. But the protection is most effectual where you cover first with earth, and then with litter outside. Loss has been sustained by covering with litter alone, especially a large body of manure that decays during the the winter, and injures bush or vine where the decay takes place.

Mr. Field — You would not cover with litter so much as to prevent the earth freezing?

Mr. Hatch — No, sir.

A voice — How do you manage to bend over the canes without breaking them?

Mr. Hatch — Give them a pretty stout pull, and bend them down close to the root. If they are very stubborn, place a clump of earth on the side. It takes two person. Grapes may be treated in the same way. Cover first with earth, and then protect with straw outside. As concerns protection there is nothing equal to earth, provided it is protected from the extremes of freezing and thawing.

Mr. Adams — How about pinching red raspberries.

Mr. Hatch — Red raspberries are different in character from black. I would not let them grow above two feet. I pinched some off, at three feet. If you have the Clark raspberry, and break it off it will rebranch and make a very awkward bush. You can do better by not pinching it off. I would say the red might be pinched from two to two and a half feet high.

Mr. Gill — Last winter I came to the conclusion that my raspberries needed protection, as a great many usually winter-kill. I set up some short crotches and put on a lot of poles and put some corn stalks across.

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Mr. Greenman — I wish to say a word in relation to protection of the grape. The object is to protect the roots. They are hardy enough as far as the top is concerned. I lay down my vines and put sufficient soil upon them to hold them down, and after the ground is frozen, I cover them with sufficient litter to keep them frozen until they thaw out for good.

Mr. Martin — My vineyard isn't very extensive, but I have tried earth and straw, and it generally succeeds. I know that grapes do not bear every year the same. Two years ago I brought my grapes down to the ground, laid a little straw upon the ground and then put a board on each side and one at the top, and I never had such a crop of grapes in my life as I had that year. I have done the same thing this year, and will tell you, if I live long enough, how they succeed. They don't freeze and thaw. They keep dry. I had a profusion of Concord grapes, and they were a splendid grape. I had only a couple of rows of vines, about forty yards long. I did it as an experiment and it succeded admirably.

Mr. Reid — I lay down my grape vines when they are pruned, using the renewal system of pruning. I put a sod on here and there, to keep them down, then go in the oak openings and get leaves, and scatter on, and put dirt enough on the leaves to keep the wind from blowing them away. There is nothing to attract mice. They never get under the leaves. I have found this far better than earth.

Mr. Gill — I injured some of my grape vines last winter. I was trying this renewal system which I heard some of you explain. I laid the canes down and covered with soil, just sufficient to protect them, and waited until I was sure the mice had gone into winter quarters before I covered them up, and let them lay in the spring long enough to be sure that the frost was pretty well over. I took them up; and there were at least four that started to leaf out and then went back, and I have always accused myself of injuring those canes in some manner in laying down and taking up. I would like to have you tell me the cause of that.

Mr. Jordan — I would like to say a word upon the question of

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undeveloped resources, touching fruit trees. My location is high land, with limestone cropping out all around the hills. On the north is a slope, covered with young timber, too steep to plow, and too stony. For a few years past I have been cutting the timber off this land as I needed it, cutting everything close to the ground except very large stumps, and digging holes and planting orchard trees. Twice a year I mow off all the weeds and brush that come up; and I believe it is going to be a success. I have trees which have been thus planted many years, where the soil was so thin that I removed a bushel basket full of stones in cutting the hole. Then I hauled chip manure and dirt and filled in. I have some ten or fifteen acres of that class of land in orchard, and I think it is doing as well as other land.

Mr. Plumb — I am glad to hear this testimony from our friend from Minnesota, in regard to planting orchards on new land; I think he has suggested one of the most practical and best methods of starting an orchard upon new lands, and especially upon that class of lands. I have been watching others and experimenting myself in this now for some eight years, and it is a complete success in every case where it has been faithfully tried. I would rather plant an orchard on raw prairie or raw timber land, without touching a plow to it, with proper after treatment, than to take that same land after it has been cultivated for a series of years.

Mr. Field — I would like to ask Mr. Plumb whether he can take the raw prairie and plant a tree, turn the sod back again so that the sod shall grow right around the tree all the time, and have that succeed.

Mr. Plumb — The after treatment is another thing, and one on which success mainly depends.

A voice — What kind of timber land would you take?

Mr. Plumb — Any land that is good enough to bear good timber and is proper for an orchard.

A voice — You cannot grow any fruit tree in the neighborhood of an oak.

Mr. Plumb — I can cite the gentleman to several orchards that have been started within the last eight years, that are a complete success.

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Mr. Field — On timber land, I think you are correct. On the prairie, I think it is a mistake, unless you rot the sod first.

Mr. Plumb — The difficulty in prairie orchards is, that the trees start forward well at first, but in a few years they begin to die. This is from the excessive heat, when you leave them in the native sod. Turn the sod bottom up around your tree, and give it sufficient mulching to retain the moisture and to give the tree cultivation enough to insure its growth, then you will retain its life. It will not overgrow, but will become a healthy, long-lived tree.

Mr. Field — I conceive that it can be done if the sod is rotted around the tree.

Mr. Wood — In these side hills, how large a place would you dig?

Mr. Jordan — As large, at least, as the largest common wash-tub. I set the trees straight up and down. I will say further, about the roots growing in stony ground, in excavating for a cellar, I found roots that came twelve to fifteen feet down through the limestone. Speaking about trees being planted upon the raw prairie, in Minnesota we have tried many plans and customs that were possibly tried here in an early day. We have men in western Minnesota who have their third farm, and yet have never planted trees, put out plants or made gardens. One man says he has lived twenty years, and never had a currant bush or grape vine, and thinks he can get along without. Transcendents I have often seen planted on the raw prairie sod, with a little mulching, and do well. That is a rapid grower. But I think a majority of our fruit trees will not succeed in the uncultivated prairie soil. I have been a good deal troubled on my place with rabbits, and put a high board fence around it for the purpose of protection from rabbits and thieves. There were a number of gullies, where almost everything was growing, and wild grapes in profusion. I cleared these all out, and planted them to fruit trees. They are doing nicely. I think all such places, that are a shelter for vermin, can be made very useful by putting out to trees and plants.

Mr. Philips — I would like to say a word for fear somebody

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may be misled. I have had some experience in setting trees on new land. I hadn't patience to go to work and break the land and cultivate it, as it should be, before the trees are set out, but I went to work and set on new land. I believe Mr. Jordan's plan is right, but you want to work understandingly. I think if you dig a hole six or eight feet square, two or three feet deep, and draw in some good soil from any place where it has been thoroughly cultivated, and cultivate the tree, that you will have it growing and raising fruit. The trees I set out on new land have pretty generally been a failure, except one variety, which will grow almost anywhere. The land needs working and cultivating.

Mr. Tuttle — It is bad enough to recommend setting trees in ordinary sod, but to recommend growing them in a brush pasture! I would just as soon put them on the side of Devil's Lake bluff. I knew an orchard planted that way some twenty years ago. I told the man who planted it that he never would raise anything there. He never has. The trees died out years ago. You might possibly dig a hole large enough, and get in good soil, get a growth for two or three years, and perhaps my friend from Minnesota may have done that thing; but unless you cart in considerable soil, you cannot even get any first growth to amount to anything. There are certain varieties of trees that, even in land that had been long cultivated and seeded down, will not bear fruit unless the ground is cultivated. I have trees standing in my ground that have stood for ten or twelve years, and never have borne anything. I let them stand a little too long in the grass. There are varieties of trees that you may grow in the grass. If you want to grow apples you must cultivate the ground just as much as if you were going to grow corn. You cannot grow fruit without cultivation. In the east, or perhaps on the lake shore where there is more moisture in the air, you can let your ground lie long in sod; but in this dry atmosphere the trees will starve to death. They won't make growth enough, if they are permitted to lie in that state, to even keep healthy. Mr. Kirk, at Devil's Lake, when he first commenced his orchard, seeded down to clover, and followed the practice for years, of mowing

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that clover and putting it under the trees. Finally, to save any part of the orchard, he had to plow it up.

A voice — Do you plow every year after the orchard is set?

Mr. Tuttle — No. Seed down for perhaps two or three years in clover, and then plow it up. It won't do to let June grass get in and remain any length of time. It must have cultivation. I would recommend the first five years after setting trees to cultivate the ground. After you had cultivated your ground for four or five years, and your trees have got a good, vigorous growth, you might seed it down for a year or two. If you want to make a business of growing fruit, there is nothing more necessary than cultivation. I can grow more fruit on one apple tree, with good cultivation, than you can grow on ten with sod.

Mr. Jordan — Perhaps I did not make myself fully understood. My idea of cultivating orchards is exactly as the gentleman has expressed. What I said in reference to planting in uncultivated and ungrubbed land, was on land too steep to cultivate, where we had cut off healthy timber. No grass sod.

Mr. Tuttle — If you afterwards keep all grass out of that soil, you might do something.

Mr. Martin — It should be borne in mind by this assembly, that trees and all vegetables are full of mouths both top and bottom. They are stretching for food. If you deny them that food they will die. In a damp country like England, where the winds blow from every quarter full of moisture, the leaves of the trees receive a great deal of moisture and they are more healthy. A tree there a hundred years old is bearing, but here about nine or ten years is the life of your apple trees. They must have moisture. This is a dry atmosphere, and they cannot get a great deal of moisture through the mouths of the leaves upon which they live. There are also the roots full of mouths, and you must cultivate the ground and let in the atmosphere and rain to strike the roots of the trees, or they will die. If it is an unbroken prairie soil, they starve to death.

Mr. Sheldon — I have had an experience of forty-five years, in La Fayette county, in fruit growing. Our first trees were set out in 1835, in the prairie sod. One or two years sufficed to show us

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our mistake. They were all gone. I have planted grapes, apples and peaches, or my father before me has, and all kinds of fruit. We have done the best we know how. We have had horticultural works in the house, and have studied them some; and after all this discussion, there is an undercurrent of thought which asks, Does it pay at last, in Wisconsin? This is rather taking the matter by the horns, to propose such a question as this. We take our fruit to Darlington, and sometimes they buy it and sometimes they do not. The last time I was in Darlington, I was solicited by a merchant there to buy a couple of barrels of beautiful Michigan apples. I told him I would take a couple if he would take four barrels of mine in exchange. He didn't see any profit in that kind of exchange. I had Russets; I had Tallman Sweets; I had various kinds of apples; but take what care I would, they would deteriorate in quality so that they would not stand the test alongside of Michigan, Ohio or Indiana apples. I could put potatoes on that soil, and buy my apples from Michigan at less cost than I could raise them. My grapes are the same. And the question now is, hadn't you better raise corn and pork where you raise these apples, and buy your apples from Michigan?

Mr. Martin—I have an orchard that pays me over a hundred per cent. I went on to the place fourteen years ago this spring. The trees were decayed, and between them was a good ditch both ways. I knew nothing about it, but thought that it didn't look right, and so leveled it down; and since that I have worked the ground every year. I found it very difficult to work with a horse, and had to do it with a hoe. The worst trouble I have had is to keep my trees from bearing too much. This gentleman says our apples won't compare with Michigan apples. I shipped a hundred bushels to Minnesota, and they came in competition with Michigan apples and Ohio apples, and mine would sell more readily and were a better apple.

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NATURAL CONDITIONS OF FRUIT TREE GROWING IN WISCONSIN.

J. C. PLUMB, MILTON.

The winter of 1855-6 remains a land-mark in the history of fruit growing in the northwest. A large portion of the varieties that had been considered safe to grow here were swept away like the snows of winter; the larger part of the orchard trees of southern Wisconsin were fatally injured by the vicissitudes of the climate. The following summer, I spent several weeks in visiting various portions of Jefferson, Dane and Columbia counties, and everywhere made careful observations of the condition of fruit trees in different locations, soils and subsoils, endeavoring to find the relations of causes and effect, and to form some rule for the guidance of future planters.

I became fully satisfied that the injuries then experienced were traceable to certain natural causes and conditions which could be avoided by a more careful selection of hardier varieties, and by planting in soils and locations which would produce the highest conditions of hardiness or self resistance to the extremes of climate. I found that certain soils and aspects would produce a heavy, hard wood, which would ripen as fast as made, while in other soils and aspects, the same variety would be soft and immature at the advent of winter. Hence, in my earlier writings on this subject, I made prominent the necessity of planting the orchard upon firm, dry soils, comparatively elevated, and with a cool, open exposure, because I found, invariably, the best condition of a tree of any given variety in such locations. Subsequent observations confirmed this view, and they have been extended to nearly every county of the state; and the rules then given are found even more applicable in the central and northern regions of our state, for as the cold increases with the higher latitude, and with more variable soils of the north, the necessity of greater hardiness is more apparent.

But I found other natural conditions coming in as factors in this problem of fruit growing; such as the constituent elements of the soil and subsoil, and amount of water it contained at different

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periods of the year; also the atmospheric temperature and degree of saturation as modified by large bodies of water. This led to a careful study of the superficial geology and topography of our state, where I found a rich field of investigation, and the foundation for a most hopeful system of practice in tree growing. Much that before was uncertain, now became clear and certain in theory and practice, and I came to believe that the "adaptation" of a variety need not necessarily be subject to the results of long years of trial in each given locality, and to confidently claim that where the natural conditions of soil and subsoil, elevation and aspect of any location are given, it is within the province of scientific horticulture, to as clearly give the varieties and treatment best for that locality, or to say if those natural conditions render success doubtful, without extraordinary expense in preparation for and care of the trees.

In my earlier studies in vegetable physiology, I came to recognize the natural forces of the tree, and saw in them that which should be better understood and more carefully provided for than was usual among cultivators, and I now see in the fruit tree a highly organized body, with its germ life and germination, its infancy and maturity, its growth and development to fruit bearing; which is the end we seek in its culture. It is built up by the addition of cell to cell. It has its power of absorption, digestion and assimilation, and in order to perform these functions properly, its surroundings must be favorable. Its nature and needs should be studied and its wants supplied. The aim of the scientific horticulturist, as well as that of the practical fruit grower, is to determine what is needed, and to supply the tree with all the necessary conditions for its most perfect development and fruitfulness. And while trial is the practical test of adaptation with the masses, it remains for some to discover the relation of cause and effect, and formulate rules for a uniform practice under all similar conditions.

Science as well as experience shows that lime and magnesia are indispensable elements in the production of fruit. And so we see that our whole series of limestone soils are well adapted to the healthy development of the apple tree and the production of the finest fruit; and they are in these respects so nearly alike that

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no distinction need be made in them where they hold true to the series.

Chemistry tells us that the ash of the apple tree has 81.0 per cent. of lime and 5.7 per cent. of magnesia in its composition, while the fruit has 4.1 per cent of lime and 8.8 per cent. of magnesia. This shows us that lime in some assimilable form is positively necessary to the healthy growth of the apple tree, and that magnesia is especially needed in the development of fruit. The oak comes next in the element of lime, having of it 73.5 per cent., and of magnesia 4.8 per cent., while beech wood shows but 16.8 per cent. of lime, with 45.8 per cent of magnesia.

Geology tells us *where* we will find the limestone in its native beds, and the general character of the soil, with the topography and hydrology of the several districts of the state. Meteorology gives us the relative temperature, and locates the greatest extremes, while vegetable physiology unfolds to us the natural forces of the tree, and enables us to understand its requirements.

All these helps thus become invaluable to the fruit grower who would be master of his profession, and stand upon a sure foundation. In order to arrive at a true basis for pomological divisions, and to aid me in this work, I prepared a map, showing the outlines of the superficial geology of our state, which has been very helpful in determining the local conditions and probabilities of success or failure in fruit growing. Our state is divided geologically into eight or more divisions or series, viz:

1st. *The Archæan* — Region of the primary rocks, the Granite, the Quartzite, with their modifications and subdivisions.

2d. *The Potsdam Sandstone* — The lowest of the Silurian group, and which was probably formed by the erosion and washing away of the primary rocks first named.

3d. *The Lower Magnesian Limestone* — The first of the calciferous series.

4th. *The Upper Sandstone — St. Peters* — The purest silicious rock we have.

5th. *The Trenton Limestone.*

6th. *The Galena Limestone* — So named on account of its lead deposits.

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7th. *The Cincinnati Shale* — Which appears mainly in a narrow belt from Waukesha county to a little beyond Green Bay, but so limited and obscure as to exercise little influence upon the soils of its own territory.

8th. *The Niagara Limestone* — Lying mostly on the eastern border of the state. And we may add the very limited exposure of the Hamiltonian series near Milwaukee.

These with their subdivisions constitute the mineral basis of our soils. They are grouped, as you see from the map, somewhat in the annular form, each division in our state forming more or less of the great circle of deposit around the primary formation, the Archæan. Much of the regularity of these original divisions was broken up by the flow of waters at their subsidence, and by subsequent glacier action, which left large masses of drift in other than its native place. In the erosion and decomposition of this underlying rock and drift, we have a composite soil of varied elements, and thus the basis for the wonderful fertility and numerous products of our great state. Geology and chemistry show us that in the limestone groups we have the most highly organized of our native rocks, rich in fossils and phosphates, and consequently we would here look for the best composition of food for the fruit tree. They are generally covered with glacial drift, which with the tertiary deposits of the clays has given a great variety of soils, all rich in the elements of tree growth, and where not too rich in humus, or too porous, are the best fruit lands of our state.

Analysis shows the limestone in our state to have the element of lime and magnesia as follows, approximately:

Hamiltonian	45.54 of lime, 32.46 of magnesia.
Niagara group	55.00 of lime, 44.34 of magnesia.
Trenton, blue	48.00 of line, 38.39 of magnesia.
Trenton, buff.....	53.63 of lime, 36.40 of magnesia.
Galena	54.51 of lime, 44.14 of magnesia.
Lower magnesian	51.68 of lime, 41.00 of magnesia.

The limestone series may occupy about one-third of the area of our state. Above the Lower Magnesian limestone, we find a belt called the St. Peters, or upper sandstone, so limited that it gives only a shade of character to the soil in its vicinity, and except in

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isolated and occasional patches, does not predominate in the soil, but has given a highly silicious mixture to the drift and alluvium which passed from it southerly. Below the Lower Magnesian group lies the great belt of the Potsdam sandstone, in a crescent-like form around the Archæan region. Its greatest width is from the vicinity of Portage City to that of Stevens Point, a distance of some sixty miles. The horns of the crescent gradually narrowing as they extend northward on either side. The actual area of this formation may be one-fifth of our state. But fortunately it is so well interspersed with islands and promontories of the limestone series above, as well as drift from the Archæan regions to the northward, that there are few townships without some excellent locations for the most vigorous and hardy fruits. While the valleys are famous for their vegetables and cereals, as well as the strawberry, both wild and cultivated, the apple and pear find this rich alluvial sand a hot-bed of disease and death. The barren sands of this region produce a feeble growth of tree without enriching; and the use of the ordinary farm manure freely, usually hastens death, producing excessive growth subject to destruction by the blight of summer, or an unseasonable growth easily killed by the frosts of early winter. Ashes, clay and lime applied annually in small quantities, will be found the best additions to the soils of this character to promote health and fruitfulness.

The Archæan region to the northward embraces the remaining seven-fifteenths, nearly one half, of the area of our state. This is emphatically the region of granitic rocks and boulder clay, of immense forests and abundant water. The great variety and growth of native timber and underbrush indicate its natural resources in this direction, and it is found to grow the apple tree as finely as it does native trees. Potash is a large element in this soil, and contributes largely to the production of healthy wood. But the absence of lime and magnesia in any considerable quantity may necessitate their addition to secure abundant fruitage. This will be done at a small cost, as the best of quicklime will always be manufactured in the limestone regions of our state, and it is now delivered at stations along the railroads running into this region at twenty-five to forty cents per bushel, or at a

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cost of one cent per tree per year. But while the native rock of this region is wanting in lime, the soil is in many locations strongly impregnated with it, which came with the drift from other regions. I have no doubt but that the hardy fruit trees will thrive well on this land, and should any question of non-bearing arise, it will easily be solved by the above named means. To determine the nature of any soil, we have but two methods:

1st. By some form of analysis.

2d. By the native vegetation, or the success of artificial crops.

In a former paper before this society (Report of 1878), I endeavored to show the intimate relation of the native wood growth to the soil and subsoil, giving five groups of native timber, with their corresponding soils, namely: 1st, the burr oak group; 2d, the white oak group; 3d, the maple group; 4th, the black oak and scrub pine group; 5th, the granitic or composite group. The first three named belong to the limestone series of native soils, the 4th to the Potsdam sandstone, and the 5th to the Archæan region.

This natural grouping is so constant and true, and from the fact that our soils are not always formed from the underlying rock, we need to know the particular character of a soil before advising fully in regard to fruit tree planting. So we always ask particularly as to the native timber, and we find it an invaluable help in our business of adviser as well as caterer to the wants of the tree planting public.

The fact comes out in the discussions of every meeting of this society, that there are strange and apparently inconsistent variations of success with the same variety, in the same latitude, elevation and aspect, and general treatment. But a more exact and familiar acquaintance with the soil and subsoil will show the cause of this diverse testimony. Our state geologist, on this subject, remarks: "The most reliable natural indications of the agricultural capabilities of a district are to be found in its native vegetation. The natural flora may be regarded as the result of nature's experiments in crop raising, through the thousands of years that have elapsed since the region became covered with vegetation."

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We have another element in our soils, which, while so valuable for ordinary farm crops, is the cause of the large portion of the trouble in fruit tree growing of the northwest. This is *humus* or vegetable matter in some stage of decomposition or rest. The soil of nearly all our valleys and prairies is too rich in this element for a healthy growth of the fruit tree in some of its varieties. If retentive of water, they produce a late growth which cannot endure the winter, and if porous and "quick," from the presence of sand, they respond so quickly to the summer shower that blight, from excessive feed, comes to the tree; and when both these conditions combine with a severe winter, then winter killing is the result, as in Minnesota at this time.

The best native soil for the growth of fruit trees in our climate is the *calcareous clay*, and that found on our timbered ridges and bluffs. Its subsoil is generally porous and well drained. In such a soil and subsoil the tree maintains the greatest vigor and growth consistent with power to endure our climate. The heavy clay soils of the lake shore region of eastern Wisconsin are among the best for fruit growing, when properly prepared by thorough drainage and subsoiling. Another favorable condition in this region is the equable climate from proximity to large bodies of water. Other formations with similar soils and elevations throughout the state should be chosen for fruit growing. To this point my remarks have been directed, mainly to *conditions of soil.*

We have other native conditions of adaptation based on *topography* — elevation and aspect; *hydrology* — drainage; and *meteorology* — temperature and moisture. Not to pursue these in detail, I will combine them in a few words of advice. Other things equal, the *higher grounds* will always be found the most favorable for fruit tree growing; the soil having a higher composition of mineral elements, and less of humus or vegetable matter; better natural drainage; exemption from summer frosts and more equal climate throughout the entire year.

A free circulation of air is essential, and shelter or wind breaks should be only sufficient to break the force of heavy wind storms. The culture should be adjusted to the moderate and healthy growth of the tree. Over-feeding and excessive growth

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being more to be feared in this climate than under-feed; *therefore*, we find a close mowed grass sod the best natural equalizer of temperature and feed to the roots of the tree. Fruit trees should be *low topped*. The shade of the tops being essential to health of the stem, and giving less leverage for high winds. And finally, intelligent and persevering study and observance of natural conditions, will bring success to the fruit growers of our state vastly beyond our present experience or even our faith.

MARKETING FRUITS AND VEGETABLES.

THOMAS H. GLENN, *Editor Prairie Farmer.*

MR. PRESIDENT, LADIES AND GENTLEMEN: — In what I shall say on the topic assigned me by your secretary, I shall hardly be able to do more than present a few thoughts, which may not be new, yet at the same time may not be altogether unprofitable, upon the theory of the efficacy of line upon line and precept upon precept. There is a necessity for better methods in marketing the products of the orchard and the garden, as may be seen in our great marts of trade every business day in the year. The truth is, fruits and vegetables of superior quality, in sightly and attractive packages, are the exception and not the rule; a lamentable fact which curtails the amount that otherwise would be consumed, and, at the same time, shrinks the returns which find their way to the pockets of the grower to pay for all the care and labor expended in their production. Nature has generously provided fruits and vegetables which succeed each other in season for man's use throughout the months of the calendar. Horticulture has appositely been designated "the art that doth mend nature," in that it multiplies and improves and perfects, giving new varieties, with the general characters of the parent, but differing in flavor, quality, size and season; so that with the progress and achievements of the gardener and fruit-grower, there is not a day in the year but that our tables may present palatable and healthful food, in the shape of fresh fruits and vegetables.

Although not exactly germane to the topic in hand, let us consider very briefly, and in a general way, the hygienic and dietetic

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influence of fruits and vegetables. Fruit, sound ripe fruit, is agreeable and refreshing food. Its nutritious value is not large, but in the economy of our bodies the non-nitrogenous elements it contains, as starch, cane sugar, grape sugar, gum and pectine, are all very useful elements. Says Dr. C. H. Allen, whose articles upon "Good Health" in the *Prairie Farmer* are so widely read and reproduced: "In the summer season meat is not the proper food for children, nor even for adults; so that vegetables and fruits necessarily form a part of our diet. The digestive organs cannot prepare so much nutriment in hot as in cold seasons of the year; so that the proper supply of fruits and vegetables comes just when it is needed." In cold weather the carbonaceous matter is burnt off by active exercise, respiration and the generation of heat; not so in summer — such matter is then largely retained in the liver, often giving rise to congestion of that organ, producing diarrhœa, dysentery and billious ailments. These complaints are generally charged to fruits because they are most abundant at that time; and sometimes when eaten unripe or over ripe, evil results may follow; but ripe fruits, in reasonable quantity, are beneficial instead of injurious. The diseases named above are complaints in which acrid biliary secretions are prominent conditions; ripe fruits are strongly anti-bilious and anti-scorbutic. Thus the vegetal acids and salts correct the injurious effects induced by a too close restriction to dried and salted food.

Permit me to add a few words more in this connection: I am aware that this general subject has occupied or will engage much of your attention during this convention, and that its different phases have been or will be presented with far greater ability than I can hope to bring to its consideration; and yet its magnitude, its importance is such that even small contributions to its discussion may be helpful, and some repetition excusable. The articles included in the list of human foods are well nigh numberless, and comprise flesh in almost infinite variety. Dairy products, in the production of which Wisconsin occupies eminent distinction, holds an important place in the list. Every wholesome root is likewise included, and last though not least, fruits and vegetables in nearly countless varieties. And it is a matter of no small

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importance that men can obtain a varied bill of fare. And just here the remarks of Mr. J. M. Hubbard, of Middletown, Conn., on this point, in an address a few days ago before the State Board of Agriculture of that commonwealth, are so apposite that you will pardon me for taking a few extracts from them. "One form of food, however palatable at first, at length clogs the stomach and palls upon the tongue. Nature demands a variety, and the demands of a healthful nature are unerring indications of a real need. The needs of the system vary with the work that is required of it, and also with the influences to which it is subjected. Heat and cold, wet and dry are conditions which we all appreciate, but there are more obscure and subtle influences from within and without which our senses may fail to detect, but which make themselves known by their effects and by the longing for change which nature voices as she may. Was it ever the lot of any one here (he asks), to spend a period of several months confined to a diet which excluded fresh fruits and vegetables? I once had an experience of this kind, not severe or much prolonged, but I shall never forget the greedy satisfaction with which I devoured a raw onion, which was the first fresh vegetable I was able to procure. No dainty of the tropics ever tasted half so delicious.

"Fresh vegetables and fresh fruits are a means of sound health for which no equivalent has ever been found. There are substitutes for them, and they answer their purpose after a fashion, but none of them equal or can equal, in health-giving quality, ripe fruits from the orchard, and fresh vegetables from the garden with the pure, crisp flavor of their earthy home still clinging to them. And as I think of the succession of fruits which troop through all the summer and autumn months, marching as they needs must do, with locked step, to avoid treading upon each other's heels, I feel that no words of mine can fitly speak their praise. As ministers of health, or ministers of pleasure, the fruits of the earth are unrivaled. But they lose something of health and pleasure giving quality by handling, by transportation and by lapse of time. The perfection of quality which pertains to these articles as they come from garden and orchard eludes the grip of the most ingenious contrivance for its preservation. Some

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of the staple articles of vegetable food will bear much handling, transportation for a great distance, storage for a considerable length of time, without serious injury. Thanks to the practical direction given to scientific investigation and inventive genius at the present day, we are constantly learning how to do this in a larger and better way, and have already greatly enlarged the list of articles which can be handled and transported without serious injury. Would that every toiler of earth, wherever his vocation requires him to live, might be assured of a food supply, abundant, varied and wholesome."

If it were not beyond the purpose and scope of this paper, the healthful uses of the different groups of our common fruits, which find their way to market, might be profitably considered at more length; but with another citation from Dr. Allen, wherein the king of fruits — the apple — is referred to, I shall pass to the immediate topic under consideration:

"The acid of apples is among the most healthful of substances taken into the human stomach. This acid rouses the action of the liver when torpid, and thus enables it to eliminate and throw off the germs of bilious disorders and those of other diseases arising from slow blood poisons. Of the many analyses of apples, all show them to contain phosphorus. Indeed, they contain this important agent of the human economy more largely than any other fruit or vegetable. They must, therefore, be classed as among the most important and valuable of the vegetable growths, especially for that class who work with the brain. It is this fact, undoubtedly, which makes the human family so earnestly crave them, sparing no expense, when able, to obtain them. It is this fact also that makes their sale so large in times of plenty, when the poorer classes are able to enjoy and use them liberally. That they were intended to be used as food, and not as a mere luxury, is evidenced from the fact that they grow wild well up to the northern boundary of the temperate zone and well down to the tropics. They are the most common fruit of that zone of the earth, famous since the dawn of civilization as producing the most profound thinkers, the most noted inventors, and the most energetic and intelligent of our race. They stand at the head of

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the list of the fruits of the farm, and may be raised almost everywhere."

Well, of what use, or what application has this to the marketing of fruits. Just this, that "the million" should consume more of this food, and would do so if the grower will present it, of good form and quality. The best packages never remain long in market; they are picked up quickly by those discriminating customers who first discover them.

As the ultimate object in sending fruit to market is to get money out of it, self-interest naturally prompts the grower to inquire how the largest returns can be had. The hackneyed Hibernicism of necessary pre-requisites in cooking the hare, is apposite here. "To properly *cook* a hare — first, catch it." To make money in sending fruit to market, first get the most desirable and popular sorts. Given that this has been done, let us consider for a moment, how much it has cost, not alone in dollars and cents, but in thought, care and labor. From the preparation of the ground and setting the plant or the tree to the fruitage, a ceaseless vigilance has been exercised. The fruit grower or gardener has kept watch and ward through all stages of growth, through all changes of season and vicissitudes of weather, through periods of drouth and flood, and the onsets of myriads of insects, and at last he sees the fruition of his hopes in a wealth of luscious product. And now the question comes, how, when and where to market it. The first requisite is a clean, attractive package. A neat box for berries, made of whitewood — such as may be had at some of the box factories that make a specialty of these goods — goes far towards securing a ready sale of the fruit it contains. And here a suggestion is not out of place, which may be thought a small matter, and yet it has some importance. Boxes should be secured in ample time, so that there may be no delay when the period for shipping the fruit arrives; but another reason is found in the fact that dry, well seasoned boxes are best, since fruit is easily affected by odors, and sooner decays when in contact with wood containing moisture than when shipped in a dry package. If boxes are obtained early and placed where they will season, before they are used, the grower will not be so liable to

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loss from injured fruit as when his shipments are made in green or partially seasoned wood. "Despise not the day of small things," is a trite apothegm that applies with peculiar force in marketing small fruits and vegetables. Attention to little matters which in themselves may be deemed of small account, make up in the aggregate an entirety, representing enhanced money value.

It hardly would be supposed that those who grow fruit for market do not understand the advantage there is in separating or assorting it, so that its uniformity in appearance and quality will at once recommend it; but it is nevertheless true, that, in the main, such is the case, or else there is an inexcusable want of care. It should be borne in mind that good, bad and indifferent fruit in one package renders it undesirable except at a small price. The vicious practice of putting good fruit at the top of a package and a poorer quality at the bottom injures its sale, and the reputation of the grower. The fruit of whatever kind should be good, carefully selected, uniform in variety, and as near as practicable in size and color. The packages should be full, so that the fruit will not move about, rubbing and abrading it, and injuring its appearance and value. In going along South Water street, Chicago, in the season of berries, one is often amazed at the want of judgment apparent in the shipper, and it is this that impels me to emphasize the necessity of more care and better methods in order to secure the largest margin of profit. A box of berries showing all the colors of the rainbow, and all sizes of fruit, even very early in the season, will be likely to disappoint the shipper's expectations; yet it should not do so. Such an one, when filling his packages, or having them filled under his instructions, probably tries to console himself with the thought that "every berry counts;" and it does; the poor berries count against him every time. And the same remark applies in regard to other small fruits.

The marketing of summer apples, so that they may arrive at their destination in good condition, requires forethought and more than ordinary care in handling. They are all tender in flesh, and most of them in skin. If it were possible to permit them to

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mature on the tree and then place them in the market just at the point of perfection of mellowness and flavor, and without a bruise, the highest success would be attained; but we cannot do this yet. Perhaps that assertion is premature; what the possibilities are in this behalf with the rush of modern improvement, including refrigerator cars, we may not presume to state. But to get *ripe* summer apples to market without injury is at least impracticable with most growers and shippers. If they are bruised they rapidly decay, for they are, as you know, very tender, and the temperature of July and August is very unfavorable to their keeping quality. Oxygen, the great up-builder, is also a great destroyer, and causes rapid deterioration. So these apples must be picked while they are still hard. Just when to pick them is a difficult question to solve. But experience with the different varieties will determine the point with reasonable certainty. It should be borne in mind that it does not pay to ship anything that is imperfect in size or quality, no matter how scarce the fruit may be. Let me repeat what has been said in the *Prairie Farmer* by a very prominent grower and shipper, one who has been long engaged in the business and is widely known — Mr. D. B. Wier, of Lacon, Ill. "I have found," he says, "from actual experience, that when I have picked ten barrels of summer apples carefully from the tree, rejecting all quite small and imperfect specimens, shipping five barrels to Chicago as they were gathered, assorting out all the handsomest and largest of the other five, filling three barrels and shipping them, that the three barrels of select apples sold for more money than the five unassorted, and that the freight and packages were only three-fifths as much, giving a larger profit, as follows:

Five barrels unassorted at $2 per barrel		$10 00
Freight 45 cents each	$2 25	4 25
Barrels 40 cents each	2 00	
Net returns		$5 75
Three assorted barrels at	3 50	$10 50
Freight 45 cents each	1 35	$2 55
Cost of barrels 40 cents each	1 20	
Net returns		$7 95

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Giving a return of $2.20 for the three barrels over the five barrels. Then the two barrels assorted out—that is the small apples—sold at $1.50 each, making $3.00 less freight and barrels, netting $1.30, and giving as profit of assorting, $3.50. But small and imperfect apples are worth as much in bulk for vinegar, cider and feeding, as the larger ones, and of course more for these purposes than for shipment.

The best package for shipping summer apples is the bushel box. The half and third of a bushel boxes are good, but their cost is considerably more in proportion to the amount of fruit they hold. The superiority of boxes over barrels for this kind of fruit, as is readily understood, consists in ventilation—a free circulation of air among the fruit being had, which is of prime importance in warm or humid weather. If the barrel is used, it should be new and clean and of full size. Remove one of the heads, nail the quarter hoops, and clinch the nails down; then place good average apples, stem downward, over the lower head, discarding all small, gnarly and wormy fruit, filling the barrel only with such as are equal to those on the head. You can then direct your commission man to warrant the fruit all through the package to be as good as at the top. With the addition of each basketful, shake the barrel well, but not violently, and when filled an inch above the rim, place the other head on and press it down gradually with a "follower," and nail it securely. Turn the barrel over and mark name of apple with red or black lead or stencil. There is nothing that gives a dealer more pleasure than to handle fruit well packed, and that he knows is just what it is represented to be. It helps his reputation as much as that of the grower.

The same general rule applies in marketing vegetables. The most profit will be found in raising the best varieties, and shipping only such as are of good quality, put up in the most approved manner. Careful handling is indispensable, especially for fruits. Here is another source of annoyance. If the fruit is a little too ripe, and is subjected to sudden concussion or is transported over an uneven roadway, it is hardly likely to arrive at its destination in good order. An easy spring wagon is necessary, and a careful driver, so that it shall reach the cars, or steamboat,

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or country market in proper condition. Thus treated, fruits and vegetables will, if well and judiciously selected and picked, be in a marketable condition when the market is reached, and one package will sell for twice as much, and more, than two packages carelessly gathered and handled, and full of litter, as is too frequently the case. The greatest success lies in the direction of care, cleanliness, and uniformity. In no department of human effort is the axiom, that "whatever is worth doing should be done well," more applicable, or more true, than in marketing the products of the orchard and the garden.

Mr. Field — I would like to ask Mr. Glenn if he can cite us to a single grower who puts up his fruit in packages of the kind mentioned, and who ships them to his commission man and says to him, "You may warrant this now, as I say to you it is all good."

Mr. Glenn — I can, sir. I will risk his name. Mr. A. R. Whitney, of Franklin Grove. I presume you know him, because there is hardly a man engaged in fruit growing in the whole Northwest but what knows him. Whatever he sends to the market, he always gets the top of the market for, or a little more.

Mr. Field — He is the exception, is he not, rather than the rule?

Mr. Glenn — Oh, yes; he has satisfied himself that there is more money, more profit in sending his fruit and vegetables to market in that way than in any other.

HOUSES AND HOMES.

MRS. D. C. AYRES, GREEN BAY.

Every home may be in a house, but every house is not a home. A building may be very magnificent, or very lowly, but it must have a certain capability not always realized, to make it a home. Oliver Wendell Holmes says, "All the elegance in the world will not make a home;" and we well know that poverty is not a good assistant in the matter. That all houses are not homes requires no argument from me; the fact proves itself. If there are not those who having houses are still homeless, why are so many ever wandering in search of pleasure which a true home should

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afford. A home is a building of wood, stone, brick or marble, it may be, lived in, slept in, eaten in, but unless it is a temple of the heart, unless the best and holiest affections of our being are there developed and brought into the highest perfection of soul life, it is one but in name. If any outside interest can, with success, rival its importance, if any pleasure can equal its attractions, it is not the true home, it is one but in name; its memories will not spur on to noble lives, or its happiness be lived over in aged minds.

A touching reminiscence of the late civil war, is that of the rival armies encamped on opposite sides of the Rappahanock river, when the Union band played "Yankee Doodle," the boys in blue shouted defiance to rebels; when the army on the opposite side played "Dixie," cheers arose from the Confederate troops; but "Home, Sweet Home" was greeted with tears from the eyes of strong men on both sides; thoughts of loved ones rushed in to smother defiance, anger and jealousy; homes in the north, homes in the south were alike desolate; anxious wives and mothers, loving children, sisters and sweethearts, sick and lonely; many dreamed of the home, sweet home which they might never see more.

Let us look into some of the homes of our own beautiful Wisconsin, which seems to have garnered so much of the riches of the earth into its bosom; our forests, grand with the growth of ages; our land, fertile and rich; climate, pure and healthful; our scenery so beautiful as to excite the wonder of tourists; our people, contented, refined and intelligent, the best elements of eastern society mingling with the free independence which seems to be in the western air we breathe.

Women in Wisconsin have free scope given them. They may speak and meet with cordial, respectful bearing; they may plead for their homes and their children, and the right to do so is unquestioned, and to-day I would ask you to look into your houses and see if they are homes.

As agricultural and horticultural societies, our object is to improve and press forward the claims of agriculture and horticulture upon the minds of the people; to prove their importance and

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develop their advantages; to increase the interest in the work of the farmer and gardener, and to learn how best to do it. While farming attracts more and more attention, and as an occupation is steadily developing its hidden resources, shall the farmer's house remain stationary? shall it be merely a place in which to refresh and rest the tired body? Shall the barns be large and well filled, the houses small and empty; the ground well cultivated, the stock well cared for, and home dreary, comfortless and unsatisfying? I know of many places that are worthy to be called homes, but are there enough in proportion to the farmers of our state? Are the children growing up in such a way that the thought of home, sweet home, will bring them pleasant memories? They will soon be the farmers themselves, and farming is fast growing to demand intelligent heads and educated minds. The time will soon come when agriculturists, having been taught by experience, will learn that a good newspaper is a great economist, and reading the signs of the times may have little corners of their own into which speculations cannot creep, and by means of which their hard earnings from honest labor shall, in good sound money, find a resting place in their own pockets, to make happy and beautiful their own homes. And shall beauty find no welcome in a farmer's home? With God given intelligence all around him breathing out the very essence of the beautiful, the glorious sunrise, the lovely sunset, the trees, music galleries for birds of the air with songs of praise tuned by the music of innocence, the soft sighing of the pines, and the whisperings of the oaks, the murmuring of rivulets and rushing of waters, the green fields and mossy rocks, the fruits and berries ever in their season; and the sweet flowerets of the field and forest, gentle, fragrant and beautiful, ever bidding us remember "though we sleep we shall rise again," surely these crown the independence of the farmer's life with a reward of nature's own bestowing.

Allow me to suggest a few of the means which may be used to change the poorest, plainest house into a healthful, pleasant, happy home: Neatness and order outside as well as inside; the children interested in adorning the house with little things of their own manufacture; a place for all things, amusements as

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well as duties; games and bracket saws, as well as hoes and rakes and wood saws—the one must be, the other can be; the little orchard, where budding and grafting, pruning and fertilizing may be as well carried on as in a larger sphere; the garden, where lettuce and spinach, radishes and strawberries, currants and grapes may cheer the eye and improve the health, and be a far better medicine than can be purchased at a druggist's.

Regularity is a requisite of a pleasant home, because the want of it is a great provocative to ill humor; so much of comfort depends on it, so much of enjoyment is lost by its neglect, that no home can afford to be without it. Gentleness, patience, good nature, long suffering, forbearing one another in love; these are Christian graces which indeed make a sweet home. There is a fund of happiness in keeping birthdays; remembering anniversaries; making the day of labor an easy path to an evening of social intercourse, each one with some new thought or fact, no matter if trivial, it will serve to rouse to greater effort.

The farmer will learn in time to consider newspapers and books as necessary as food and clothes. Ignorance must vanish when thrift begins. The press to-day educates the American people, and it is of no use to go back to the dark ages unless we watch the present one. While the history of the past is necessary, that of the present is imperative. Ignorance may dwell in a house, but not in a home.

There is no home, however poor, that the sun does not seem to find the easier, if there is a flower in the window. There is nothing which tends more to refinement in the family, than the cultivation of plants; it is a perpetual source of interest and enjoyment; a fresh leaf; a new bud; daily improvement in some petted variety; setting out and nursing in the spring; taking up and repotting in the fall; protecting from frost; shielding from too intrusive heat — one hardly has time to be selfish — unless selfishness takes that form. The cultivation of the flower garden affords endless enjoyment, and should be a thing of perpetual beauty; there are so many vines to hide the ugly wall or unpainted fence; so many wild flowers which will improve under careful cultivation, that no home, however poor, need be without

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flowers. Our Wisconsin woods hold the finest flowers of America in their keeping. Let us gather them in, and make a garden of beauty around us; loneliness will depart when nature sends her messengers of pure enjoyment; they alone will turn a House into a Home.

In passing through one of the streets of a large city, I had my attention attracted to a large sign, "The Farmer's Home." Ah! how well did its owner know how to choose a name for his place of business! Yet the farmer who deliberately accepts its invitation, gives up his house as a home; robs it of happiness and cheerfulness; his money clothes another person's family, while his own needs it; his hard labor supplies other children with food, while his own are hungry; home is not sweet to his little ones now, nor will its memories be in the future.

From our houses are to come the future homes of this country, and its homes are its strongholds. Every child, trained for a good citizen, is a boon to the state. In their hands they are to bear the welfare of a nation. In the homes of a people lies its strength. If these words may rouse one mind to consider whether they live in a house or a home, I shall be deeply gratified for the privilege of speaking them.

"WOMAN IN THE GARDEN."

MRS. PROF. A. KERR, MADISON.

The pages of poetry and romance abound in pleasant pictures of women in the garden, where she challenges our admiration by her air of elegant grace, as she vies in beauty with the flowers by which she is surrounded. In many a story we have read how, when a maiden is to be wooed and won, her lover seeks her in the garden, where, if words be wanting, he may tell his love in flowers. A worshiper afar off, too modest to urge his suit, he repeats these words of the poet:

> "I saw thee midst the flowers, a spirit of bloom,
> And joy and freshness, as Spring itself
> Were made a living thing and wore thy shape."

This is very beautiful, but it seems to us far removed from our

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work-a-day world. We are beginning to find out that a woman can be useful as well as ornamental in the garden. Of this we have a notable example in the Princess Royal of England, Crown Princess of Prussia, who, we are told, set to work to rescue the garden surroundings of the new palace from the sad decay into which they had fallen, devising all the projects of amelioration herself, and even sketching the plans with her own hand. It is reported that she grows strawberries in rare perfection, by covering the soil between the plants with flakes of flint. By retaining and reflecting the heat of the sun, the surface of the flint contributes in a remarkable degree to the early ripening of the luscious berry. But it is her wonderful rose garden which is the special pride and delight of the Crown Princess. Hundreds of rose trees alternating with rose bushes, creeping and climbing roses, and beds of moss roses, cover the velvet-like turf in perfect arrangement as to colors and size of growth. Here she has set the seal of her royal favor upon the work of woman in the garden, by causing to be inscribed upon a tablet her own poetic words:

"This plot of ground I call my own,
Sweet with the breath of flowers
Of memories of pure delights
And toil of summer hours."

When I lived in Georgia, before the war, I saw what woman could do in the garden, for on the upland plantations it was universally the custom for the mistress, with her house servants, to take care of the flowers and vegetables. Even in the winter the well-kept garden paths, bordered with box, were pleasant to walk in, and "collards," freshly gathered every day, were never wanting at dinner, in a well regulated family. There they had a pretty fashion of setting pinks and daffodils among the "kitchen herbs"—summer savory and sage, thyme and rosemary; and I have seen a rose bush planted at each corner of a large onion bed, from a fancy that the roses would smell the sweeter.

Since the comfort and the health of the family depend in a great measure on woman's care and forethought, some may say that she has quite enough to do within doors, without troubling herself about the garden. But do you not judge involuntarily

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of a home by its surroundings, and do not trifles influence your judgment? Somebody once told me that he could always make up his mind correctly in regard to a hotel or boarding house, the first time he sat down to dinner. The castor, he said, was a true index. If it was bright and shining, well filled with black and red pepper, catsup and vinegar, and especially if the mustard was just right, it was a good omen, and to this day, if I find my castor lacking these essentials, I begin to look around into corners and cupboards, for I think my housekeeping needs "toning up." Similarly, a neglected dooryard indicates a want of thrift, or, at least, the lack of woman's watchful eye and careful supervision. Now I would not have you imagine for a moment that I consider it possible, or even desirable, that a woman should do all the work in her garden. A woman has no right to make herself a household drudge, indoors or out. She is queen of the kingdom of home, and, "with love's invisible scepter laden," she may rule the hearts of those who rule the world. Every woman who is so fortunate as to have a home, should seek to make it

> " * * the spot of earth supremely blest,
> A dearer, sweeter spot than all the rest."

Let peace, and order, and beauty adorn it within, and let her bring the same educating hand, the same judicious arrangement, the same tender and loving care, to the garden, and success is assured.

The poet Cowper, describing the rural occupations of a retired gentleman, has expressed so neatly what I would say that I quote his lines — with a change of pronouns to indicate woman's appropriate work:

> "If the garden with its many cares,
> All well repaid, demand her, she attends
> The welcome call, conscious how much the hand
> Of lubbard Labor needs her watchful eye.
> Oft loit'ring lazy, if not o'erseen,
> Or misapplying his unskillful strength.
> Nor does she govern only, or direct,
> But much performs herself.
> No works indeed
> That ask robust, tough sinews, bred to toil,
> Servile employ; but such as may amuse,
> Nor tire, demanding rather skill than force."

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The enthusiasm of one woman, what will it not accomplish? I have known a family where the interest in the garden was so intense, that from the oldest to the youngest, all devoted themselves to its care. The husband said to his wife, "When I am with you in the garden it seems to me that it is the be-all and end-all of existence to work there, that my business is nothing." The small boys would leave their play to help in "Mama's gardren," and even Lena, in the kitchen, would say, "Vill I put the vash-vater on your flower-bed, it is not too far, it vill make it gut." There is indeed no better place for, home training, and happy is that mother who has the time and taste to keep her children about her in the garden, instead of sending them even to a kindergarten to have them out of the way.

The cultivation of small fruits, which is much more general than formerly, especially commends itself to woman. Within the memory of you all, it was considered by farmers quite a piece of extravagance to have strawberries on the table. A minister's wife once gave me a bit of her experience which will illustrate this. In the outskirts of their parish there lived a well-to-do farmer, who occasionally attended church, and seemed inclined to aid in its support. One warm summer's day, this farmer, having business in the village, made a friendly call at the house of the minister, who happened to be absent from home. Now the minister's wife did her own work, and, having no family except herself and husband, had not prepared any regular dinner that day. After her household duties were finished, she had attired herself in an old muslin dress, which she still wore for the sake of economy, though the last vestige of color had faded out, and had seated herself to read and rest. But when this farmer called, my friend, mindful of the Scripture, "Do good unto all men as you have opportunity," invited him to share with her such as she had for dinner. She gave him excellent bread and butter, some cold meat, and a cup of tea, and because she had no pie or cake to offer, she set before him a dish of strawberries, which she had that morning picked out of her own little garden. The farmer ate with a relish, seemed to appreciate her kindness, and went his way. A few weeks after, she heard that he had said to one of

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his neighbors, "I did calculate to take a crock of butter up to Elder Turner's; want to give the minister something, you know; but I took dinner at his house the other day, and, I declare, his wife was all dressed up in white, and she had strawberries, too; said they'd had them every day for a week. My wife can't afford to wear white dresses, and we can't afford to set such a table as she had." There might have been some truth in that last statement, for while a farmer with a good garden can live right royally, he who has none fares ill. How ill, we may not know until too late. We see both the farmer and his wife broken in health, not so much from incessant hard work, as from the want of wholesome food. With plenty of fresh fruit and vegetables a farmer may lessen his doctor's bill, and escape many of the ills that flesh is heir to. I could point you to a prominent physician of Madison, who, one day in spring complained to his wife that he was feeling miserably, almost sick. Naturally, she suggested that he "take something," a quinine powder, perhaps. But no; doctors are not fond of taking their own medicine. He said, "I must have cabbage, raw cabbage." This was provided, and the doctor, having partaken freely, was himself again.

Then since we see that well prepared food, in abundant variety, is essential to the highest degree of health, and since many farmers have no time, taste or inclination for gardening, does it not follow that the farmer's wife should assume the care of the garden? Do you tell me that her cares and labors are already too great for her strength? I reply that these new duties will bring with them new delights, and a happiness unknown before. Let her plan wisely and wait for developments. If she has tact and management, she will find willing helpers, and none more willing than the farmer himself, who before "had no time for such things." But let her be content with small beginnings. A few rows of raspberries are very nice to start with. By the use of a pair of pruning shears, which can be bought for one dollar, she can trim them with perfect ease, and they will soon make a fine show, and if the ground is well mulched, they will need very little care. A strawberry bed containing one hundred plants will yield enough berries to make every one wish for more; while a

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few grape vines of the hardy varieties will be found to repay, a hundred fold, the time and money invested. Soon her husband, instead of taking his visitors as far away from the garden spot as possible, will say: "Come and see my wife's garden;" and when he hears her praises spoken by his neighbors, he will have for his wife a new admiration and respect; and some evening when she sits down to the tea table with a bright geranium in her hair or at her throat, he will bring a pretty flush to her pale cheek, by saying: "Why, Mary, you look as fresh as a girl."

We read with interest of the flower missions of large cities. We, perhaps, vainly wish to share in this noble and blessed charity. But do we, in Madison, realize that there is a very successful flower mission here at our very doors? and that its success is wholly due to the work of a woman in her garden? Let me bring it to your mind, you cannot fail to recognize the place. It was originally a most unpromising spot; the towering walls of the church near by, cast over it their long, dark shadows. Cold and damp was the soil, and the ground was hard and covered with rubbish which the builders' hands had scattered. Most would have been content if they could have adorned this waste bit of ground with fresh, green turf, whose emerald hue contrasted with the gray walls, would have been restful to the eye. But this was the home of a large souled, benevolent woman, a lover of nature, a lover of humanity. When her neighbors said "nothing will grow there," her cheerful answer was: "I don't know as anything will grow, but I'm going to try to have a few flowers." With infinite labor she prepared the soil and tastefully arranged the garden beds. First she planted pansies, whose royal purple and gold held the admiring gaze of the passer-by. Then, more ambitious as the summer came, she added geraniums of varied and contrasting hues — a bed of rich foliage plants — and set vases filled with exotics. Her porch she hung with baskets of trailing vines, and over her door she trained a passion-flower. Slow was their growth at first, but patient, loving care has its just recompense of reward. When the full tide of the summer heat is upon the gardens of the Capital City, and with its scorching breath withers the flowers, and makes brown the lawns, this

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consecrated spot is fresh and fair. On Sunday, of all days in the week, this garden displays its rarest charms. The holy repose of that day of devotion reigns there. The ivy-mantled walls cast over it a grateful shade. When the deep-toned organ peals, and the choir and the great congregation swells the song, "Praise God from whom all blessings flow," the sweet, glad blossoms join their silent worship. When the service is ended, grave, stern men lean over the low palings to admire, and I have heard one and another say to my friend: "I want to thank you, personally, for your beautiful garden; it has done me good."

When the minister is away taking his vacation, these flowers are preaching a sermon, and, while their beauty and fragrance are filling all the place, they breath the benediction, "Peace on earth, good will to men." Thence many a blossom finds its way to the room of the weary invalid, and when the home of poverty is darkened by the shadow of death's wing, these gentle messengers tell of a light beyond the tomb,

"Where everlasting spring abides,
And never withering flowers."

ROSES.

SAMUEL BARTER, MARKESAN.

In the published reports of the Horticultural Society I have seen but very little about the care and cultivation of that queen of flowers, the rose. There is no tender plant that requires less labor to protect than the rose bush, and certainly there is nothing that will afford such an elegant display of beauty and fragrance as a choice collection of rose bushes in bloom. I am endeavoring to make a specialty of their cultivation, but not to the exclusion of other beautiful flowers, such as dahlias, geraniums, the lilies, gladiolas, carnations, tulips, asters, pansies, etc. I find by experience that the rose has only two formidable enemies in this climate, viz., the rose slug in summer, and the intense cold in winter. The slug appears about the first of June, and is easily destroyed by one or two applications of Paris Green, in the proportion of a small tablespoonful to a ten quart pail of water,

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sprinkled on the bushes with a whisk-broom. For protection in winter, all that is necessary, with the exception of a few of the tenderest varieties, is to bend the bushes to the ground and cover with straw. My plan is, to hold down the bush while some one drives pieces of lath into the ground on each side of it, and tie with wool twine across from one lath to the other over the bush, to hold it down, then cover lightly with straw.

I have one rose bush that I challenge the state on. I send a description of it: The average height is six feet. In 1878 it made one shoot from within two inches of the ground to a height of ten feet, and one in 1879 of eleven feet. The rose is a bright pink or rose color, very double, perfect in shape, does not fade, and the last leaf of the blossom is bright when it falls. In 1879 it began to blossom on June 15, and was full of roses until July 23; it bloomed the second time August 7, and was not without a rose on it up to October 8, 1879. The name is "Louis Odier," of the Bourbon variety. I have other kinds, the Hundred Leaf, Madame Plantier, Tea Roses, Moss Roses, Perpetual Blooming Roses, etc., but have never seen anything to equal the Louis Odier. I hope this may stimulate some one to try to excel it.

A motion was made by Mr. Plumb, that a vote of thanks be tendered the ladies who read papers, for the same.

Mr. Babbitt — In rising to second this motion in behalf of the two societies, I desire to say that we do not offer in compensation dollars and cents, for we could not give it if we saw fit; but we are very grateful that the ladies come to these meetings and give us such excellent papers; and we want to have them remember when they go home, that we admit that their power is greater than ours. Ladies, you know very well, although you do not take your positions as politicians or active members in the outside world, that your influence is potent. You exert in your homes that power which men cannot exert —

> "That power which resists the empire of decay,
> When time is o'er, and worlds have passed away.
> Cold in the dust the perished heart may lie,
> But that which warmed it once, can never die."

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No. We live in thoughts and feelings; not in figures on a dial. He most lives who thinks the most, feels the noblest, acts the best; and he whose heart beats quickest, lives the longest.

I expect that we shall have a unanimous vote in favor of the resolution.

Mr. Wood — I came this year, as has been my custom for a few years past, to attend these conventions which are annually held in Madison, and have been spending the last three days in attending the meetings in the rooms below. I have given diligent attention to the subjects which have been discussed, and to the remarks which have been drawn out by the various papers which have been presented. Most of them, as a matter of course, have been upon subjects which are supposed to point toward the accumulation of money; and this is doubtless very good, because temporal wants are pressing us on every side; and we know that in these times, with great burdens resting upon us, we need to work intelligently and profitably. But I have listened to the general tone of the convention when men only were present, and have been somewhat pained by the apparently mercenary or heartless motives which prompted many of the remarks; the mere idea of money-getting. And it seems to me that while some are mourning over the fact that young people are oftentimes induced to leave the farm in order to obtain more lucrative positions in the world, that we are at fault in this respect in our home circles, in holding up before our children success in money-getting as the chief success of life. I believe that we should hold up to them a truer standard, and not press upon their attention so much the importance of simply acquiring wealth. I know that there are many noble men who are struggling hard to gain for themselves and their families the necessities of life, who would gladly be released from these labors if they could only succeed in gaining a competence. They are pained from day to day with the fact that their lives are so apparently taken up with the idea of acquiring property. We must have sympathy for such men, and excuse them for an appearance, sometimes, which belies their hearts. Money-getting is one thing, hoarding money another.

I am pleased, Mr. President, with the remarks to which we

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have listened this afternoon. And if I were to point to either part of our convention as the one in which I take the most pride, and which I think would most commend our labors to the respect and earnest attention of the people of Wisconsin, it would be that class of subjects and that line of thought and sentiment which has been inculcated here this afternoon. I would point to it as a thing which would justify our existence, rather than to those discussions and papers which point us simply to the processes of acquiring wealth.

President Smith — The question is upon a vote of thanks to the ladies. I can say to you that the ladies work for nothing, and pay their expenses. I am sorry that the society is not able to pay them. Yet we can appreciate their kindness the more. And what is still more, I know that the authors of some of these papers that we have listened to this afternoon are ladies who do their own housework. They are not rich, but they are cultivated.

The motion was carried unanimously.

The following questions were presented and discussed:

How shall we prune Rogers' hybrid vines?

Mr. Greenman — It will depend a little on the age of the vine. I would prune it the same as I would any other vine — according to its age and strength. As most of the Rogers' Hybrid vines are very strong growers, I should leave more fruit buds and more spurs upon them than I would upon the Delaware. The new wood should be pruned back to two or three buds, and allowed to cover a space of from four to six feet square. If you have two canes for arms, cut them back to four or five feet long, and cut the spurs back to three buds.

Mr. Hatch — How may we know which are fruit buds?

Mr. Greenman — Fruit buds are always found upon the new wood. The wood of this season's growth produces the fruit next season. We get no fruit upon two year old wood.

Mr. Hatch — Can you tell whether a certain bud will produce a fruit spur or not?

Mr. Greenman — Not otherwise than you could tell whether a

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strawberry plant will bear fruit. The strawberry plant will not produce fruit unless it had sufficient time during the last season to form a fruit bud. The fruit is already formed in the bud, and you can discover in cutting open the buds of the grape vine in the spring, a little cluster of fruit or blossom, and unless those buds have sufficient strength or maturity to develop the fruit in them, you will not get any fruit. If it is a well ripened, developed bud, it will produce grapes. If you had a microscope sufficiently strong, and could open that bud with sufficient care, you could see a cane four feet long in that bud an eighth of an inch long. The best fruit buds are those that are plump and large.

Mr. Jordan — Is it not a fact that you can rub off all the buds that appear, and that dormant buds will then come out and bear fruit?

Mr. Greenman — They will in some varieties, but most varieties do not produce fruit from the accessory buds.

Mr. Hatch — Would you renew a Rogers Hybrid from the ground on account of its vigorous growth, or would you leave considerable of the old wood?

Mr. Greenman — My experience has been that I never get any very good fruit from the Rogers vines by what is called the annual or renewal system of pruning. I think the best fruit is produced from spurs or arms of the old wood.

Mr. Hatch — What do you use for mildew?

Mr. Greenman — In regard to mildew on the Rogers vines, I am of the same opinion as four or five years ago, when I read an article on the subject. My observation convinces me that the Rogers, after they are thoroughly established, will commence to mildew, and when they have borne two or three crops, you begin to have trouble with them, they lose their foliage. I discover the mildew usually on the stems bearing the fruit clusters, and I immediately use a little sulphur. Throw a little sulphur into each bunch, and a little upon the vines, and perhaps on the ground. I went over more than five hundred Rogers vines this season with a little less than two pounds of sulphur, and had but two mildewed bunches of grapes that I know of, in my vineyard, and they commenced to mildew before I commenced to use the sulphur.

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Pres. Smith — Is there any danger of over-manuring the Delaware vine?

Mr. Greenman — I do not know that there is. I never manure very much. In too rich soil the wood grows so rapidly that the fruit buds don't seem to fill.

A voice — Can you grow grapes on a strong, rich soil, where the ground lays comparatively flat?

Mr. Greenman — If I had a flat ground on the top of a hill, or ground moderately sloping near the top, I should take that. If not, I would take prairie. I would have grapes, anyway.

Mr. Chipman — In answer to President Smith's question about fertilizing the Delaware vine, would you not say that you could fertilize it too much?

Mr. Greenman — I think they will bear higher culture than the rapidly growing vines, and produce fruit.

Mr. Hatch — What do you do to save the foliage when it is dropping, in the summer?

Mr. Greenman — I would produce some new canes.

Mr. Hatch — Suppose along in the middle of the summer your leaves are dropping off, and you cannot check it so as to grow new canes?

Mr. Greenman — The probability is you will not have any fruit next year, and perhaps not any vines.

Mr. Jordan — You say you would rather plant on the top of a flat hill than on a prairie. I do not know as I fully understand you.

Mr. Greenman — My experience has been in planting upon a very steep hillside, and on the top of the hill, that my best fruit is up where it is not quite so steep.

Mr. Jordan — How would it be at the bottom of the hill?

Mr. Greenman — If it is a southern exposure, your vines are liable to burn out.

Mr. Tuttle — You cannot grow a Concord grape, after it gets very old and strong, by the renewal system, on very strong, rich soil. You can grow them where the tendency is to make a moderate growth. The renewal system produces a succulent growth, but does not furnish much fruit. I can get more fruit off of one

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vine without using a knife to it, or covering it for five years, than they get off of fifty by cutting. If I was going to grow Concord grapes on flat land and a very strong soil, I should cut back the vines for the first year or two, then you will get some fruit, but after they get age and strong roots, I believe it is better to leave ten, twenty or thirty feet of vine of the old wood.

I have three hundred Concord vines that stand at the foot of a hill where you come down into the black soil. The first year or two they bore very well. Since that, I have never been able to get grapes enough to pay for bothering with them.

When I commenced setting out a vineyard I planted it on the south side of a hill, sheltered from the north and from the west, and quite steep. I thought I had as good a place for grapes as there was in the state, and planted all varieties, particularly, a good many of the Rogers, and for a year or two I got some Rogers grapes in good condition; but it has been many years since I have raised any Rogers grapes that amounted to anything on that side hill. I have abandoned it as a place for a vineyard. It had a regular southern Illinois climate, and the grapes mildewed.

Mr. Jordan — Can they beat us in Illinois raising grapes?

Mr. Tuttle — No, sir. The rot and mildew are a great deal more common south than here. In regard to the Rogers grapes, different kinds require different treatment. The tendency of the No. 15 is to produce an excessive amount of wood, while with No. 4 you have to encourage the growth of wood. I think No. 4 is one of the very best of the Rogers grapes, and the fruit is less likely to rot and mildew than No. 15.

A voice — How do you manage No. 15?

Mr. Tuttle — It depends entirely upon the soil. On heavy clay soil you can practice the renewal system. I do not believe, with the renewal system, you can do anything with a No. 15 grape, unless it stands on the north side of a hill, and in very heavy clay soil. I believe if I was growing No. 15 grapes in a village, I would try and put them on the east side of a board fence or building, and would train them thirty feet long; have something that I could lay them up onto in the summer and drop them down in the winter. I believe you could grow more

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grapes on one vine in that way than on twenty in the ordinary way.

FILLING UP AN OLD ORCHARD WITH YOUNG TREES.

What is essential in planting a young apple tree where an old one has died, and large trees stand adjacent, to insure growth of the young tree? Is it necessary to draw in fresh soil, or to plow the land, using plaster or some other fertilizer, and if so, what is best?

Mr. Greenman — I do not know as I can answer the question, but I will make a statement. Mr. Rudolph Brown, of Wauwatosa, has an old orchard where forty trees, more or less, had died out, and Mr. Stickney took the job of filling them in, and warranted the trees to grow. He took a great deal of pains in setting the young trees, and had filled up the orchard twice, thoroughly, when Mr. Brown said that he was satisfied, and gave it up. Young trees cannot be made to thrive, scattered about among old trees.

Mr. Hatch — I apprehend that the circumstances would be something like this: A tender variety, or a variety that was not sufficiently hardy to endure the climate even under fair chances, had been killed out. Now, if so, of course it would be folly to plant the same variety over again in the same place.

Mr. Greenman — They planted hardy varieties.

Mr. Hatch — Then the practical question would be: Can we, where a Tallman Sweet has failed, succeed with the Duchess of Oldenburg? If I had a poor site, and a good variety had failed, I think I never would try again.

Mr. Olds — I remember hearing that question come up at a horticultural meeting in Illinois that I attended a few years ago. And Mr. McWhorter, I think his name is, one of the pioneers of the fruit business, said that he had tried to fill up places where old trees had grown, and had always found them a failure; that there was something gone from the soil that the tree needed; and it was folly to attempt to fill up with new trees.

Mr. Greenman — Mr. Brown has since selected a new site just adjacent to the old, and set out a new orchard, and the trees are in splendid condition. They have been set two years.

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Mr. Jordan — In nine cases out of ten, I believe, if young trees are planted in old orchards, they starve to death. That is the main trouble. If you clear up the land in an old orchard, plow it up, and cultivate it, you can plant a new orchard on it, especially if you don't plant in the old sites where the roots are.

Mr. Hurd (Walworth County) — I have had a little experience in that matter. I set out fifty trees, and they commenced dying out. A good share of the orchard died out, and after that I kept filling in, but had no success until two years ago. I then had a German at work for me, who had been drilled in that business for five years — as an orchardist and a gardener. I set him to filling in my orchard; he filled it, and the trees are doing finely. I found I didn't know how to set out trees. In the first place, he digs a hole about three or four feet across and three or four feet deep. Then he fills in with the same soil to within a foot or so of the depth that he wants his tree. He sets his trees in there, and fills in around them a top soil, works it up a little, and throws in a little water. He leaves it until the water absorbs, then fills the place and tramps it down. He has not failed in a tree that he has set out.

Mr. Tuttle — I have good trees growing where I have taken old trees out, and some varieties have done remarkably well; but it is necessary to prepare the ground where trees have been grown and stood for a number of years. I have practiced sometimes taking the brush, and portions of the tree, and burning it on the ground, digging and cutting out the old roots; you don't want to leave any of those in there. I have an orchard growing near my house, and I should hate to move it off anywhere else, and neglect to plant trees where old ones have died out. I have trees all the way from two to ten and twelve inches in diameter, growing where trees have been taken out. If you take the stem of the old tree out, and stick another in the place, it will be pretty sure to die, especially in a dry season. It is better to give the ground time to become fitted for the new tree. I planted a tree four years ago in a place where I had taken out an old tree. It was about the size of my cane; now it is four inches in diameter.

Mr. Phillips — Did the German put anything in except the same dirt that he took out?

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Mr. Hurd — Nothing but the same dirt.

Mr. Kellogg — It would seem that the German's method would have been all right if he had only gone and got soil that had not been tainted and filled the hole. I think the effect of taking the same soil will be felt by the tree after two or three years. If McWhorter, of Illinois, as Mr. Olds states, has failed, and gives it up as a bad job, I do not know what we can do.

Mr. Phillips — The finest Pewaukee trees that I have, and the finest I have seen anywhere for their age, are set in an orchard, but I am of the opinion that they are not in the places where the old trees stood. The ground is worked up good. They are fifty per cent. better than where I set them out on cultivated ground.

Mr. Palmer — I live in the openings, and sell trees to men in the openings where it was timber land once. Occasionally I hear a man say, there is one spot where I cannot make a tree grow. I tell them I believe there was a tree growing right in that spot sometime, and it has taken out the natural food for the tree. In filling in old orchards, I find when there is a complaint that the tree dies, they were set right in the same place. I believe if they take soil enough from another place to start the tree they will get it to grow. They won't until they do. The trouble is the tree that stood there has taken all the natural food that the tree wants out of the soil for a certain distance around. I do not believe it is a disease in the old wood that prevents the trees growing, so much as it is that the food of the tree has been taken out.

Pres. Smith — I would like to say one word upon this question, because it is a very practical question, and one that has arisen and will arise more and more. It rests upon two points: Is there anything in the place of the tree which died out, which is poisonous to the new one? That is the first question. I answer, no. It is as natural for one tree to follow another as anything in nature, but is a question of nourishment. The old tree is supposed to have exhausted the elements that the new tree needs, which you must supply by other soil. If the old orchard is in grass, you need to cultivate it.

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SUMMER MULCHING STRAWBERRIES.

How should strawberry plants be mulched during the summer, if at all?

Mr. Greenman — They should be mulched lightly in the winter, and leave it on during the summer.

Mr. Adams — I have an idea that any man here who has grown strawberries, knows enough to mulch them thoroughly with something. What that shall be is a question of circumstances. If the man happens to have leaves, he can mulch them with leaves. If he happens to have straw, he can use that. If he has saw dust, he can use that. If he has marsh hay, he can use that. If he has coarse marsh grass, he should use that by all means, for it stands clear above any article that I know of for that purpose. I read an article a few weeks ago, written by some gentleman in Michigan, a professor, I believe, in the University, upon this subject, and he stated that it was his custom to chop up his straw into very fine particles and distribute it over his strawberries. I do not know what his object was. I have had probably fifteen years' experience in mulching strawberries, and I find the best results are obtained by mulching heavily with any coarse material finer than corn stalks, and let that mulching remain during the season; allow the strawberries to come up through, and only remove the heavier portions of it. I apply it in the fall, just as soon as the ground freezes or just after. The only advantage of putting it on after, is that you can drive upon the ground. Watch the weather closely, and put it on just at the time it freezes. The advantage of summer mulching is in keeping the ground moist, and keeping the fruit clean.

Mr. Hatch — After the crop is off would you cultivate again?

Mr. Adams — After the crop is off, if the season is an ordinary one, not specially dry, it is well, immediately after picking the fruit, to mow the vines, rake them up and burn them, and clean the ground up thoroughly. Plow up at least half of the vines, and perhaps three-fourths, and then drag it crosswise and leave it.

Mr. Hatch — That would look like murder to me.

Mr. Adams — It certainly is death to all insects on the plantation, and it is also death very nearly to all the weeds.

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Mr. Hatch — Nearly all the plants?

Mr. Adams — No, sir. We treated two acres that way, and the neighbors went along with their hair standing on end. In less than two weeks the plants came up fresh and green and vigorous.

Mr. Hatch — You speak of it as an experiment.

Mr. Adams — I speak of it as a fact established by experiment.

Mr. Jordan — In my experience the most successful plan is to plant the strawberries in rows, three to three and one-half feet apart, and let them run, keeping the space between the rows clean. Cultivate them in the fall, or latter part of summer, thoroughly, and then mulch them just as the ground freezes in the fall. Rake the straw off of the plants in the spring, between the rows, and leave it on these vacant places until the fruit is gathered. Then take off all this straw, and run a fine-toothed cultivator through the patch, and clean it out in good shape.

Mr. Adams — The effect of the burning is to prevent the plants from running. Last season our plants run but very little, while the season before, treated in exactly the same manner, they made numerous runners.

Mr. Tuttle — I have mulched with almost everything, but I have found the best mulching is corn stalks, laid not in bunches but straight, so as to be even all over the ground, thick enough so that you cannot see any of the plants. I tried that, and thought of course that I should have to remove the stalks in the spring; and in the spring commenced moving them. I didn't finish it; I left it for a few days, and when I went back to do the remainder of the work, I found the strawberries growing up through them, and I left them there. The vines were much better, and the fruit was larger, and the drouth had no effect on them at all. Those very stalks laid on them through the next winter, and the next winter they were partially decayed, so that they made a good mulching for two years. The Crescent Seedling, the new strawberry that we are growing, will take care of the weeds after the first year. I saw the original bed, which has been fruited five years, bearing heavy crops, and is entirely clean from weeds.

A voice — How do they bear after they get so thick and matted?

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Mr. Tuttle — I do not know that there was any difference in the bearing between the first year and the third year. And they claim that the fifth year it bore just as large a crop as any time, and the man said not one single dollar's worth of labor has been put out on the bed since the first year.

Mr. Kellogg — We can prove anything any one wishes here on either side. No matter whether it is up hill or down. One man says, put on the mulching in the fall, and take it off in the spring; another that you want to leave it on and let the plants come up through it to protect the berries and kill the weeds. After fruiting, I want that mulching out of the way. Mr. Adams' plan of renovating the old bed is all right. I tried it once, and I had a finer picking of strawberries from that ground than I had ever taken from the two years of its best fruiting. A year ago last spring I set out 800 plants in one body. The rows are nineteen rods long and four feet apart. The last row had ninety-nine plants. The third picking on that row was a hundred quarts. They were mulched with sawdust, and the mulching was not taken off. They are now a solid mass of vines. Last fall I mulched some, and some not, and propose to see whether they will mulch themselves or not; next season I can tell you whether the part of the patch that is not mulched is dead or alive. What troubles me now is, how shall I pick the fruit next season? It will be six inches deep.

Mr. Adams — Can this gentleman recommend the Crescent Seedling for a market berry for shipment five hundred miles, in comparison with other leading varieties?

Mr. Tuttle — I found no difficulty in marketing and shipping the Crescent Seedling, and heard no complaint. We shipped to St. Paul. That was the furthest place shipped. The Crescent Seedling appeared to be quite as hard a berry as the Wilson. It is more juicy, yet I would rather send the Crescent Seedlings five hundred miles and put it on the market, than the Wilson after they have been picked forty-eight hours. I can put the Crescent Seedling beside the Wilson after they have been picked forty-eight hours, and spoil the sale of the Wilson entirely. As a market berry, I do not know of anything better.

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Mr. Adams — From what little I know of the subject, I differ with the gentleman about the merits of this berry. We have not raised it extensively ourselves, but I have witnessed its growth and examined the berry very closely, and it is impossible to see, from its structure, how it is going to endure shipment like some other varieties. The Crescent Seedling is not a large berry. On the plantation I examined last summer, the vines had run together, and the fruitage was not over one-half the size of the Wilson.

Mr. Tuttle — My berries will average larger than the Wilson.

PRUNING FRUIT AND ORNAMENTAL TREES.

GEORGE P. PEFFER, PEWAUKEE.

The objects sought to be attained by pruning are few in number, but it is necessary that they should be clearly understood in order to secure the desired result. The first object is to give the desired form to the wood growth; the second, to promote fruitfulness, and the third, to renew, or to give fresh vigor to the growth. Pruning in general should be regarded as regulating the development of the growth of the limbs and twigs of the tree, the guiding of the top formation so as to secure a proper and well balanced head, rather than cutting and slashing, which are too often resorted to, to bring the tree into the desired form. Too often the trees are planted and left to grow without care until they come to bearing age, or even later, and then, to bring them into shape, large limbs are cut off late in the spring, when the flow of sap is so strong that bleeding, as we call it, cannot be checked, either by the sun, or by the use of paint, grafting wax or shellac gum on the cuts; and this will blacken the wood and cause it to rot, thus destroying the health and vigor of the tree.

If an old orchard needs trimming on account of excessive growth of top, or for overbearing, do it in the spring, before the sap starts; or if it is too thrifty to bear fruit, prune after the leaves have fully expanded, say in June and July. Then there will be no necessity for painting or covering up the cut, as the sun will soon harden it so that the sap cannot flow from the

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wound, turning the wood and bark black as when cut in early spring. In trimming large trees do not make hop poles of them, or cut off too much at one pruning. If a large portion of the top is taken off in the summer, it will weaken or sicken the tree and stop its growth. If it is done in the late winter, or in the spring before the sap has started, it may occasion too strong a wood growth, so that the body will be covered with water sprouts, or so large and late a growth that the wood will not be ripened up sufficiently to stand our hard winter climate. Prune moderately and understandingly; avoid excess and regulate the time and amount cut away to the object you have in view, and the strength or growth of the tree. If the object is to promote fruitfulness, prune when the leaves are fully expanded, and the tree is in full growth. If wood growth is sought, prune when the tree buds are dormant. The same effects can be produced by root pruning, making the tree sick, and stopping its wood growth, and causing it to form blossom buds.

In pruning to give shape to the tree we have a definite object in view, and must adapt the treatment to that. If we want a particular tree on account of its species or variety, we leave the pruning to nature, and thus secure its natural form. If both fruit, and space and ornament are to be considered, we must assist and direct the development by pruning, commencing with the first appearance of the leaves when a seedling. If the object is fruit and early bearing, the trees should be taken up and grafted, the tap root cut off and the other roots shortened; but if nice thrifty trees, for ornamental purposes, are wanted, the tap root should not be cut or the other roots disturbed. Then the tree will throw up a main leader and form its top around it in a natural manner, according to its regular habit of growth. This is true of all shade and ornamental trees, and of evergreens. If natural, symmetrical tops are desired, plenty of room and sunlight should be given. If the trees are crowded, a good deal of clipping and trimming will be required to develop the proper shape.

Many people think that trimming evergreens, or cutting them back to give them a particular shape or form, will injure them. This is not the case if not done to excess, and if done at the right

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time. The best time is after the trees have started out for the new growth, and before the new wood becomes hardened. By clipping off the end of the shoots at this time new buds are formed and many new shoots start out. There are hardly any rules that can be given, or particular forms prescribed to follow out in pruning. The different varieties or species grow in such different shapes that no one standard can be adopted. The varieties of fruit trees differ so much from one another, that everyone familiar with trees can distinguish the variety by the habit of growth, form of limbs, or shape of the head. Some of the varieties, instead of trimming up, need shortening back; others, instead of thinning out the tops, need cutting in so as to thicken them up. The different characteristics of growth need not be mentioned as the trees show them for themselves.

The nursery is really the place to study the character of the growth of the different varieties, and to trim and form the shape of the tree. Any one who has raised trees from seed is aware that the root or sprout breaks out first, and is supported by the starch in the dormant leaves that shield the bud, until it starts out to the light. The nourishment from these dormant leaves, sustains the leading sprout or root until it sends out firm fibrous rootlets, and a supply of earth food is obtained to feed the plantlet until it can expand its leafage sufficient to enable it to draw on the atmosphere for its support, and to elaborate the earth food sent up to the leaves for digestion. The plant at this time is but a single bud; it has but one point of upward extension. All the strength and energy of this bud are given to the formation of its first leaves. But no sooner are these leaves opened out than a new bud appears in their axil, and another extension is provided for, capable of self existence on separation. So in the axil of every leaf of the season's growth a new bud is formed. These buds may be found ready to burst the second season into a growth each for itself, although they all depend on the same root. Every bud may be removed and the growth of those remaining is not thereby checked, and the bud that has been removed, if placed under circumstances favorable to its life, will grow and make a new individual tree, the same as the seedling tree itself. Now if

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a tree can be divided so that every bud will, if placed under favorable conditions, make a new tree, it is plain that in each bud resides the individual life principle, and that the whole of the buds grow together as a well ordered community, wherein the private individual interest is never neglected, and the labor of all is always for the common good of the tree, while the leaves that support the buds have worked up gases all summer long, from the atmosphere and earthy ingredients, such as silica, iron, acids, lime, soda, and other minerals, to build cell walls and fibers, which extend from the stem of the leaf downward clear to the root.

Here, then, in a tree we have a community made up of as many individuals as there are buds, and supplied with an immense apparatus for absorption in common, by which earth food is taken up, and supplied with another immense apparatus, not in common, however, by which ærial food is taken up, the whole to be digested in the innumerable chlorophyl cells of the inner bark. This structure is in our hands to be treated intelligently, and if we prune, to do it for a purpose. If we do it in summer, and rob the tree of its leaves, it also stops the root growth in like proportion. Every careful observer who has anything to do with raising trees, has probably noticed the peculiarity of rival action on the growing shoots, or limbs. Let one get a few inches the advantage of the others, and it will, with an increased energy, draw more and more of the earth food, and go ahead of the other branches. Upon this fact is based one system of pruning. Now, if a limb is cut off or a shoot pinched back, or a bud rubbed off, it is supposed to be done for an object, and it depends upon how well we understand the nature of the tree and its process of growth and development, whether our pruning is wisely and rightly done or not. The very first requisite to the care of trees is a knowledge of their anatomy and physiology, then on this we can build a rational or successful system of culture and treatment. Neither experience alone, nor study alone, can give that knowledge, but both experience and study are requisite, and while experience has taught us the rivalry of the branches, study has given us the explanation of the causes for it, and has assisted us in taking advantage of this trait or characteristic to secure the desired

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results in form and growth. We have to direct the development by the early removal of superabundant shoots, or shortening in of the branches. Every young tree needs attention as soon as it commences growing from the seed, bud or graft, near the surface of the earth. If, as is the case with most trees, they are intended for standards, that is, smooth stems, three to four feet high, the side shoots of the stem must be pruned off, neither too soon nor too late. If too soon, the trees become slender or top heavy, and get crooked; if too long neglected, or not pruned at all, they become low, bushy, and much of the vital force is spent in useless wood or branches, which has to be cut off and is wasted, and the stem will be scrubby or uneven. But to do it properly, pinch in the side shoots with the thumb and finger while they are yet tender, the first year, and the second do the same on the main leader, and then prune off the first year's stubs. Thus the tree advances more rapidly in height, and at the same time enough branches and leaves are left to form wood on the stem, and stiffen it, and produce stout and well proportioned trees. By this treatment, any form may be given to a tree; for as the sap tends naturally to all parts of the tree, and more strongly to the growing points or summits, by pinching off or cutting back any part, we throw the sap and vigor of the tree into the rest, and form the head to suit the variety.

Now the tree is ready for setting out in the orchard. If the nurseryman has done the trimming or shaping of the tree, nothing more is required until it is in bearing condition, except perhaps to cut out a small limb or two that interlaces or crosses others, or perhaps where a limb takes the start and grows faster, or on one side and overbalances the tree top. In such cases cut back or shorten these limbs in, and be always prepared with your knife to correct such growths at any time during the season, except when the wood is frozen. Never trim or cut or do anything when there is frost in the wood or tree.

Renewing or invigorating old trees or making new heads to large trees, we have mentioned already partly under the head of pruning. There are some owners of orchards who most erroneously suppose that when trees become old, heavy pruning will

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restore their vigor in absence of good cultivation, while the correct way is to trim lightly and give good cultivation. If there should be limbs that are diseased, cut them out first, and then shape the tree as near as possible to a well balanced head. It often happens that some few have large trees, that are worthless, or that bear small fruit, and they want to change them by grafting them with better sorts. In such cases, instead of cutting off large limbs and grafting them all in one spring, it is better to prune the top partly, and set the grafts on small stubs, say from one inch to one and a half inches in thickness, the first spring. Always commence on the topmost limbs and in the middle of the tree first. The next year graft more or the balance of the limbs, if the tree is not too large, but if very large take three or four years to do it in, and your top will be all right and bear fruit on the grafts set before you have the tree all finished. Of course the further you get from the center of the tree top in setting your grafts the second and third years the better balance and more perfect the tree will be.

President Smith — How large a limb would you graft, in putting on new tops?

Mr. Peffer — Not over an inch or an inch and a half, at the furthest.

President Smith — If the limbs are large where they come out from the body, you take near the end?

Mr. Peffer — Of course; commencing near the top, and working downwards.

Mr. Haight — Do you consider, when you put the graft in the top of the old standard, that the graft will be hardier than it will on the natural root?

Mr. Peffer — No, it will not be any hardier, but the further you get away from the ground the more apt it is to stand the climate.

Mr. Haight — What is the harm in pruning when there is frost in the wood?

Mr. Peffer — As the frost comes out it is very likely to destroy the vitality of the bark and sap wood.

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Mr. Tuttle — I have rarely listened to a paper read before this society that shows so much good sense and practical experience as the paper read by Mr. Peffer. We may let that paper go upon our books as perfectly safe to follow. It shows good, practical experience, no theories; it is the result of long continued trial and experience.

With regard to top grafting; fifteen or twenty years ago, the theory was quite prominent among fruit men that by top grafting such trees as the Rambeau or the Spitzenberg with cions from the Duchess, we were going to get some valuable fruit, and they would live. I have no question but what they would live longer than one grafted at the roots, but we have winters that knock the bottom out of the theory. You cannot depend on trees grafted in that way. We want a tree with a hardy body, and the tree grafted at the root makes such a body.

There is one practice which nurserymen have followed, and recommend, which I consider one of the greatest humbugs in use, that is, grafting on crab roots. All experience east and west is that the crab as a stock is worthless. There may be varieties of apples that do better on crab stock, but I have not found any yet. They do well at first, and then dwindle away. If a person wants to get a little fruit right away, he can in this way bring them right into bearing. As an orchard tree, the circulation is impaired, and the tree is made tender. It will bear a few apples, but never grow to be of any size.

Mr. Wood — I would like to ask Mr. Tuttle a question. It seems that certain tender varieties can be more successfully grown on top grafted stocks. What should be used for the stock?

Mr. Tuttle — I would use the hardiest stock I could get. There is no tree, unless it comes from a climate equally as severe as this, that can be said to be tested, as to its hardiness, under fifteen or twenty years. I was in Kilbourn a few days ago, and a man told me he had a Duchess dying — an old tree. I told him it would be a curiosity to see a Duchess tree die — an old tree, and I went around to see it. It was a large tree, and when I got to it, I saw that the body was a seedling. The tree was top worked, five or six feet from the ground. The seedling was just

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about used up. The Duchess tried to live, and there was some little appearance of life in the top; but the body was so near used up that of course the tree had to go. If I was going to top graft any trees now, if I had Duchess trees that I wanted to put into something else, I would work such kinds as the Wealthy. Something that I thought would pay.

Mr. Hatch — How would Fall Spitzenberg do for top grafting?

Mr. Tuttle — I think that would do very well. I do not consider it near as hardy as the Wealthy.

Mr. Olds — I would like to ask Mr. Peffer what he would do with young, thick tops, like Perry Russet and Northern Spy. Would he let them take their natural course?

Mr. Peffer — All trees that are thrifty, upright growers, instead of trimming from below up, I would trim from the top down, so as to make the limbs spread out.

Mr. Olds — Would you take out any limbs in trimming them?

Mr. Peffer — Yes, some, but not so much as to expose the limbs that have been shaded to the sun too much at once.

Mr. Olds — Does not your experience lead you to conclude that many of that class of trees, having such a thick headed habit, require to be allowed their natural manner of growth to a great degree?

Mr. Peffer — All the growth is upward, and on the Northern Spy and the Perry Russet the tops, as a general rule, are peaked: the limbs grow straight up; the consequence is, blossom buds do not form, and even if they do, the shoots take all the sap, so the blossoms will fall off before the fruit sets.

Mr. Olds — I want to bring out some explanation in regard to the process of root pruning large apple trees that are in a thrifty, vigorous condition, and do not bring much fruit, like the Flushing Spitzenberg; it never bears much, but it is an excellent tree.

Mr. Peffer — If a tree is growing too fast, and you do not want to touch the top, you must prune the ends of the roots, not so as to take big roots, but a little on the outside of the spread of the limbs, either by cutting them off with a spade, or take a good plow with a sharp coulter, and cut deep enough so as to cut the

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ends, so as to stop the flow of sap and check the growth, to sicken the tree in fact; that is all.

Mr. Olds — The question with me in regard to inducing fruitfulness has been, whether it should be done by retarding growth or by applying some sort of a fertilizer different from what the soil possesses.

Mr. Jordan — In regard to unfruitful fruit trees large enough to bear, I find there is a growing habit among some who are raising orchards, of girdling the tree, thereby bringing it into immediate fruitfulness. There is a little risk attached to this, if it is not done at the proper time; it may kill the tree, yet if it is done at the right time you may strip three feet of bark off the body of the tree; peel it entirely bare, and it does not kill the tree.

Mr. Kellogg — What time is that?

Mr. Jordan—It is some time about the first of June or last of May.

Mr. Field — When the new bark is forming on the inner part of the tree.

Mr. Jordan — Anything that impairs the vitality of the tree produces fruitfulness. It is the nature of all plants to propagate their species before they die; consequently, if you do anything which threatens the life of the tree you induce fruitfulness; root-pruning answers the same purpose, though it is more difficult than taking off the bark. I would advise those who are going to practice this, to take a limb or a number of limbs first. Some say you need not take much, a quarter of an inch in width answers the same purpose as a larger space. It simply stops the downward flow of sap and produces fruit buds; the sap that usually flows down in the bark is used in forming fruit buds. There has been a question or two asked me since I made the remark about grafting early in the spring. Some do not seem to understand it fully, and doubt it a little. It is a new idea to graft in January, February and March. I think I am safe in saying that any man who is an experimental grafter, and understands it, will graft the first warm days that come. I do not care how soon it is. Do it just as he does in the spring, and he will say he never had better success. I never have failed with any of my early grafting. I have done some already this season.

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Mr. Field — You would not do it when the limbs are frozen?

Mr. Jordan — No, sir; any day a man can work out comfortably without mittens. Another thing, if you graft at that season of the year, and make your wax with tallow, your work will be a failure. I never use tallow in out-door work except on the ground. Instead of tallow, use linseed oil to thin your wax. I will give the receipt: Three parts of resin, one of beeswax; linseed oil sufficient to soften it, so that it will pull and work (like taffy candy does in the house) out of doors, the way you want to use it. I never use paper, cloth or anything but the clear wax, pull it into a ribbon and wind it around, covering all the wound and the graft. An old orchard man asked a moment ago, whether wood recently cut did not receive damage from freezing. I tell him no, because the wounds are all covered with wax, and it is no more liable to injure it, because it freezes hard, than if there had been no wound made. I grafted a number of seasons when the mercury went twenty degrees below zero afterwards, and never had better success than with that grafting.

Mr. Haight — I would like to ask if the gentleman would follow the same plan with plum or cherry trees that he does with apple?

Mr. Jordan — I have been successful with grafting the plum into the wild plum early in March or April; nearly as successful as with the apple. I think my cherries grow about as well as the plums. I think that nine-tenths of these grafts in the plums and cherries grow. I seldom lose a graft that I put in early, of the apples. Late grafting almost always fails. Another thing, some farmers think that nobody but an experienced hand can graft. That is a mistake. Any man or boy, if he is a common work hand, can graft with very little practice. One summer I did all my grafting, because I was so particular. Last year I had a German boy, about sixteen or seventeen years old, who was rather a stupid fellow, and I set him at work at it, and watched each day or part of a day, to see if he was doing it just right. I found a good deal of fault with him about some trees, but still his grafting did as well as mine. He was a common hand, and never did any before in his life. It is the way you prepare your wax and put it on, more than any other one thing.

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Mr. Peffer — You would have to be particular in getting the bark united?

Mr. Jordan — Yes, but they have a long time, a month or six weeks, to form this callous, where it is grafted early, and that is going on every pleasant day; consequently they are united before it becomes time for the sap to flow.

Mr. Olds — Did you ever use cloth?

Mr. Jordan — Yes, I have used paper and cloth and have every time fallen back to using the plain, simple wax. When the beeswax and resin are thoroughly melted, I take my pan or dish off the stove and go out into the yard, and then commence to pour in the linseed oil and stir as I pour in. When I think I have got nearly enough in, I grease my hands and commence pulling as I would taffy candy. If, as it gets cool, it snaps, it is too hard. I will put that piece away and melt it again, and pour in more oil until I think it is right. The children all help me to prepare the wax, and I lay it away in a bucket of water to use. I have about three grades of softness of wax, to use in the morning and in the evening. On a day when the wax would be too cold, I take the ash bucket and put in the bottom some hot coals from the stove, and take a little bucket of hot water and renew the water I keep the wax in, so as to keep it warm enough. I have grafted on days as cold as this.

Mr. Millett — What is the best time in the year to prune apple trees?

Mr. Jordan — I would say, whenever you can pinch off new wood with your thumb and finger. I do not do much pruning. It will not do in Minnesota. I am speaking of a colder climate. If you prune, and leave the wound open, it is a good deal like bursting a hole in your window; it lets the cold in. Consequently I do not do much pruning, unless it is done with the thumb and finger, or I wax it over. Another thing, Mr. Peffer spoke in regard to top grafting trees. For the last four years I have never grafted a tree without taking off the entire top and putting on an entire new one. I have grafted Transcendents that were six inches through, putting in as high as seventy-five grafts in a tree.

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Mr. Kellogg — I do not think we can adopt the plan of grafting a whole top, as proposed by our friend from Minnesota. I agree with Mr. Peffer, that we must take two to four years to work a large tree over, and it must be done carefully. These grafters that go through the country do it to make money, and you pay for it and lose your trees most every time. I would like to ask Mr Peffer if he has ever grafted in January or February?

Mr. Peffer — I never have.

Mr. Jordan — The most successful grafting I have done for the last four years was done early either in January, February or March. I see no difference in any time previous to a week or so before the buds swell. I like to do it at least two weeks before the sap begins to flow. There is no risk. I have enough cions of Wealthy to put in 20,000 grafts this spring, and I intend to do it before the stock grows, or I shall not do it all.

Mr. Peffer — What stock will you put them on?

Mr. Jordan — Transcendent.

Mr. Peffer — That tells the story. As soon as the stock commences to grow you cannot graft a crab apple.

Mr. Adams — I have heard it stated that pears can be successfully top-grafted on apple trees. Can any person give us light on that subject?

Mr. Peffer — I have tried it but never succeeded. I have worked them on thorn, and did tolerably well on the White Thorn and Mountain Ash. They lasted for a few years, but they went, of course, after a little while.

Judge Bryant — When I was a boy, my father had an apple tree that had Baldwin's Early Sweets, native apples and pears growing on the same tree for a great many years. He also had pears growing on a Mountain Ash. I saw him graft pears in a Rock Maple tree, and saw it grow for the first year well; the next year it started and then died.

Mr. Plumb — You may believe everything Judge Bryant says about Short-horns and Jerseys, but when he talks about grafting apples on maples we think it is a lawyer's story.

Judge Bryant — I did not say apples, I said pears.

Mr. Tuttle — I have worked the pear on an apple tree, but I

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never yet have found a tree that I thought was worth anything growing in that way. I believe the only way to work a pear, and have it worth anything, is to have it on a pear tree, and the only way to have them ironclad and free from blight, is to get them from France!!

Mr. Kellogg — I have tried pear grafting on the apple, Mountain Ash and White Thorn, and on the native pear seedling. They are an entire failure, except up at Green Bay. I would like to turn this grafting question a little towards evergreens. If any of you have long legged evergreens that are growing up, just cut their heads off. If they are twenty feet high and out of shape, cut them off ten feet and cut the limbs in proportion. Keep them there until you have them as handsome as you want them, and then let them grow up again. They should never be set less than eight feet apart, if you want them for ornament. You can shear any kind of evergreen into any shape you wish. If you do not cut it below the lower limbs you can cut it clear down, I do not care how big it is. Do not be afraid to cut the limbs; that is, cut the ends of the limbs, trim them in.

I call on Mr. Tuttle, who advocates this pruning in March, and who says you can cut off limbs as big as your leg, and I don't know how much larger, and no damage is done.

Mr. Tuttle — I find, in cutting large limbs, the best time to do it is before the sap starts in the spring. I generally wait until I am satisfied the extreme cold weather is over. I have trimmed at all seasons of the year, and done all kinds of work in trimming. I have trimmed carefully with saws, and cut the surfaces smooth, and I have cut limbs that were six or eight inches through with an axe, and I have never found any time so good for cutting large trees and large limbs as before the sap starts in the spring, and give the cut sufficient time to sear over. I have cut part of a tree in the latter part of March and part in June, and the tree shows, and did for years, that the cuts made in March never turned black, while those made in June did. If I had a tree like the Perry Russet, or something that I wanted to check the growth of and turn to fruit, or possibly a young orchard of thrifty growth and not bearing, by trimming in June,

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I could, by retarding the growth, develop the fruit buds and bring on a crop; but it injures the vitality of the tree in checking the growth. It is generally conceded that trimming when the leaves are on checks the growth of a tree. I have done about as much heavy pruning as anybody, for I have had an orchard growing in the most miserable shape that an orchard ever grew in, limbs coming out right at the ground, and in order to do anything with that orchard, I have had to go into it and cut off those limbs and keep running it up, and I have succeeded now, until I can plow right up to the tree, and I have cut off large limbs without any injury. I used to think we could not trim trees here as we did in New England, but if you will take the right time for it, you can do it as well here as there.

Mr. Plumb — This matter of pruning, on which we differ as widely as we do here, is certainly worthy of further discussion. My observation and my theory is, that if you cut off a limb of a tree any time before the sap starts, and it remains without protection, that tree is sure to bleed when the sap starts. The first sap that starts in the tree is as thin as water, and it will push out through that wound, and the wood will become black. But if you wait until the leaves have started just a little, the sap is changed in its nature somewhat, and is changing every day, and the bleeding will be very much less. You cut off a limb in September or October, when the juices of the tree are thick, and the juices form their own natural cement, which fills up that wound, and it never will decay. Any wood chopper will tell you that. You go into the woods where you have cut the previous winter, and you will find every place you have cut decayed in some shape; but if a wood chopper went into the woods three or four years ago in the summer and cut off a limb, it is as sound as a bone. Now I will cite an example. About three miles from this city, Mr. Stone had an orchard, and it was limbed out, grand, noble arms, bearing nicely, and somebody told him the orchard would do better by trimming it up. He went in there about the first of March, and he and his man spent a week trimming that orchard with the saw and axe; cut off limbs as large as my arm. Two years afterwards, says he, "Plumb, my orchard

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is all going to the shades. It is all rotten. I want you to go and look at it." I was by there, and went and looked at it. I says, "When did you trim it?" He replied, "I did it in March." I says, "Your orchard ought to go to the shades." I think that was six or seven years ago, and his orchard is just beginning to recover, but a great many of the trees died. Now, if when he cut off those limbs he had put on some sort of a varnish that would have filled up and prevented the flow of sap, he would have saved nine-tenths of the difficulty. It was not the loss of the limbs, but making those large wounds and the flow of sap. If you want to cut in March, you ought to be sure on all large limbs, to apply some sort of a varnish, which will supply the place that nature supplies other seasons of the year. Take equal parts of resin and linseed oil, and melt them together and apply hot with a brush. Any one with a little ingenuity can get up a little furnace, and any time within a week or two after you have done your sawing, before the sap starts, go over and varnish them with boiling hot wax. Another way is to take gum shellac and dissolve it in alcohol and apply that cold, and it will answer the same purpose. Put it on thin. Unless you fill up the wounds, I advise you not to trim at this season of the year.

I want to say a word more about the pear business. From 1845 to 1855 we grafted almost all our pears upon apples in Jefferson county; hundreds and thousands of trees, not only standard apples and seedlings, but the native crabs. Very many of them bore. We had quite an abundance of pears. We found some varieties very successful. The Flemish Beauty never succeeded. A few of the slow growers succeeded fairly well, but in a few years they passed away. It is not to be recommended only as a temporary expedient, because the pear is not adapted to the apple. There is no congeniality as a rule. There was just one variety, a very worthless little pear, that seemed to form just as perfect a union as any apple, but we never thought it worth while to propagate them in that way.

Mr. Shivley — I have had some experience in old orchards, and I rise for information. A year ago last January I bought an old farm in the town of Brooklyn, and there was an old orchard

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on an elevated piece of ground, underlaid with limestone, some of the limestone pretty close to the top of the ground. The trees were put out in 1850. Some of the branches were alive, but the old part had become kind of scrubby, and had hardly grown for ten years. There was an old man living there, who was not considered a benefit to himself, nor much of any to anybody else, but if you put the right man in the right place, he can be beneficial in some place, one way or another. I met him one day, and asked him if he knew anything about trimming apple trees. He said he did; he had done it East enough to learn his business. I made a bargain with him for ten dollars to trim that orchard. My son lived on the farm, and I went away, and did not pay any attention to it. In a few days I saw my son, and he said: "You had better some out and see the orchard, Thompson is spoiling it; he is cutting it all down; he is doing a butcher's job, cutting off the limbs with an ax; and the inside limbs, where he cannot reach with an ax, he is sawing off with a saw." I went over, he had the job about done. I did not say a word, but paid him his ten dollars. I did not expect the orchard would be of any account. It had not borne any apples for ten years to amount to anything, and what it had borne were bitter and scabby and everything but good. There were 150 or 200 trees. It took me and my son three days as busy as we could be to haul the brush off, and the old man got wood enough to last him a year. The result was my son got all the apples he could use, and the nicest and the best fruit I ever ate, I think, came out of that orchard. There were not a great many apples, because there was no top, but what few limbs there were, all bore nice, thrifty apples, smooth and clean. It was trimmed some time in March. The orchard is looking thrifty and nice now, and I want to know what course to pursue with it, and what is going to become of it?

Mr. Kellogg — I would say keep it in cultivation, withhold crops for three years, and then seed it down to clover.

Mr. Tuttle — This question is as well settled among fruit growers east and west as any other question in horticulture, that we cannot prune as early west as we can east. Further south they may prune in the fall. I do not believe it is safe here to prune in

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the fall. I notice, in getting out nursery trees in the fall, if the trees are injured, as they sometimes are, by rubbing the bark off with the rope, they are generally dead in the spring. If you make any cut in the tree late in the fall, the tree is not in condition to go well through the winter. In the east there are no two opinions about the proper time for pruning. It is either done before the sap starts, in the spring, or in June, after the foliage is well out. I have tried this pruning and cutting large trees, and have never since I commenced pruning in the last of March, had a tree bleed one particle. It does not even color the wood. It is the only time I ever pruned when I thought the thing was a perfect success. I used to put on wax where I pruned, and those trees would bleed. The wax kept the pores open, and if the wax was tight all around, the sap would ooze through the wax. I have put paint on it, and tried to put shellac varnish on it, and I can see no cause to use either. If you prune and let the cut dry, it heals over. It is a well laid down principle in the books that pruning done in June will heal over rapidly, but the inner wood is liable to rot. The wood is sounder where it is cut early in the season. It will not heal over quite so rapidly as it will pruned in June, but it is sounder, and never rots.

Mr. Jordan — I hope that what our friend Tuttle has said will not apply to any section of the country but where he lives, because I think it will not do generally to adopt that plan. According to my experience in the southern part of Minnesota and further north in this state than where Mr. Tuttle lives, it would be injurious to do that way, and there is only one plan, and that is, if you are going to cut trees, do it when they will not bleed. After the leaf is fully out is the best time to prune in a cold climate, and even then I prefer waxing or putting on a solution of varnish. I would prefer waxing no matter when I prune.

Mr. Olds — I want to ask the gentleman who had the orchard pruned, if his trees did not throw out an abundance of water-sprouts when the trees were cut?

Mr. Shivley — No, sir. I have noticed but very few. The bark on the body became smooth where a few years ago it was like shell-bark hickory.

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Mr. Olds — My experience has been, when I prune in the spring, the tree fills up with watersprouts, and I would certainly have to do the work over again in two years.

Mr. Chipman — I would like to ask what benefit there is in pruning. My trees that have been pruned have all died within three years., and that has been the general rule all through our locality. I had a little orchard north of my house, with about 150 trees, about fifteen years old. I got a man to prune it up, and in three years there was only one tree alive. I have now a nice orchard, set about five years. They are urging me to have it pruned up. I am afraid if I have them pruned up, they will go back on me. There are four trees, set out thirty years ago, that have never been pruned. Three of those trees have averaged one hundred bushels of apples apiece, in the last three years. The other tree is a shy bearer. The rest of that orchard of 150 trees died in 1877, I think.

Mr. Sloan — From my observation and experience in trimming apple trees, I do not believe anybody is justified in cutting a large limb off from an old apple tree in this country. I think, if it is done at any season of the year, the tree is in danger of dying. I do not believe there is ever any necessity for it. I do not think there are ever so many large limbs upon a tree, but what, if you are going to consult utility, they can all remain there. You might, perhaps, if you could do it safely, improve the shape and beauty of the tree. You can cut out enough small limbs so there will be light and air enough in it. The trouble with old trees is the exhaustion of the soil at the root, and the place to begin renovating old trees is at the root. You must feed it; manure it. You may safely cut out small limbs. The large limbs will not interfere with the usefulness and fruitfulness of the tree, but if you do not plow it and manure, put on ashes and the mineral elements which are necessary to make fruit, and to bring the tree back to life; where it has stood for fifteen or twenty years, and exhausted these elements, it will naturally fall into a state of decay.

I should be glad to see a resolution passed that no one is justified in cutting a large limb from off an old apple tree. Begin at

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the root, and feed it, and cut out such small limbs as are necessary to give it light and air, and you will restore it to life, and not impair the life of the tree, so that decay will set in, and the tree rot away and die. In that way, I think, an old orchard may be restored to usefulness, no matter how stunted the growth of the tree, if you will feed it where nature intended the food should be taken, at the root, and let the large limbs at the top alone.

Mr. Plumb — I do not think we are justified by any true theory of culture or of renovation in cutting off the large limbs of a tree. You may do it because the limb is in the way, but that is the exception and not the rule. This farmer supposed he must trim his orchard, and get rid of those large limbs so as to cultivate it. If he had let those large limbs remain, and cultivated outside of them, he would have secured all the benefits of the renovation of the orchard, and the probability is that his orchard would have lived many years to have given him pleasure and profit. We cannot enforce too much the danger of cutting off large limbs. I know of no principle which should induce one to cut off the large limbs of a tree when the head is once formed.

Mr. Babbitt — In following up the argument of Mr. Sloan, I would say I have a neighbor who had a very old orchard. He took as large a load of manure as he could haul with two splendid horses, and deposited that around every tree he had, with a quantity of ashes, and in a very short time he had plenty of apples for his neighbors.

Mr. Tuttle — I do not believe it is necessary to cut large limbs off a tree, if the tree is growing as it should be; but the theory, twenty or twenty-five years ago, was that we must get the limbs clear down to the ground, and we have had our orchards in such a state we could not get around to cultivate them, and it was necessary to cut them off. I do not believe that in the present manner of growing trees it is necessary to cut large limbs, but still I think I can do it without injury to the tree if I want them off.

Mr. Chipman — Of the trees in our locality, there is not one alive that is not limbed out close to the ground. All those trimmed up high are dead and gone.

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HYBRIDIZATION.— Mr. Peffer being called on to give any new facts he had brought out in his experiments in hybridization, remarked that his experiments in this direction had not developed anything of importance, beyond what he had stated in his paper on this subject in 1872–3; but they go to confirm the statement there made, that the mother tree or plant controls the form, hardiness and style of the tree, and the male (or stamen) tree or plant determines the season and character of the fruit, in a large degree. I have fruited the past season, for the first time, a hybrid raised from the seed of a hybrid crab fertilized by the Duchess. This crab was from the little yellow crab and the Green Everlasting. The cross of this winter crab by the Duchess furnishes a striking example, going to confirm what seems to be a certain principle in cross-breeding (mentioned above), for the shape of the fruit, and the outside form and workings bore a resemblance to the Duchess, but the texture, flesh, flavor and keeping qualities were changed, and were much improved. The fruit of this new hybrid is now (February 4) in good condition.

The Gibbs crab, which took the first premium at the State Fair in 1879, also substantiates this law. This is a hybrid of the small yellow Siberian crab, fertilized by the Fall Greening. The essential characteristics of both parents are seen so prominently in the Gibbs that no one can doubt its parentage. The Bellflower and many other crabs exemplify the same law.

The conclusions I have drawn from my observations and experience in hybridizing are few and simple, and may be stated as follows: If we wish to produce new varieties that will be sufficiently hardy to stand our climate, we must select for the mother trees the hardiest varieties we can find, and the varieties used for fertilizing should combine all the requisites of a good tree, and the choicest qualities of fruit, of the kind desired.

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HANDLING AND KEEPING APPLES.

B. B. OLDS, CLINTON.

Doubtless many are ready to say, as this subject appears upon the programme, that all has been said and written upon it that can or needs to be said, forgetting how few of our Wisconsin fruit growers bring into practice the teachings of our best and most experienced fruit men, and how many are making failures rather than success in this most important branch of the business, While I hardly hope to bring out new ideas upon the subject, I shall feel amply paid for my effort if I succeed in awakening an interest that may result in any decided change among the common farmers in the way of handling apples.

From observations made in marketing my last year's crop, as in years before, I am convinced that with proper care, the early and fall apples can be sold just as well at eighty as at forty cents per bushel. The most common method practiced by ordinary farmers coming under my observation is, that as soon as it is seen that the apples are falling freely and are mellow and ripe, they are shaken from the tree and hurridly dumped into bags, with stems and leaves clinging to them, and perhaps the small and inferior, wormy ones all going right in together, then toted off in a lumber wagon to market, and the farmer seems to be well satisfied with a net sale of forty cents, as the dealer says, "that is all we can pay for Wisconsin apples;" while at the same time good Michigan apples, well put up, are worth $2.50 to $3.00 per bbl. Under the circumstances the dealer cannot afford to pay any more. If the supply is large or the weather becomes unfavorable, they soon begin to perish, and perhaps a portion have to be thrown out, so that the dealer is glad if he gets his money back and becomes disgusted with that kind of business. Now you may say, "what matter is it if your neighbor is satisfied with that kind of business, since you know a better way?" My method is to closely watch the ripening of the different kinds, and, before ripe enough to fall, pick by hand carefully into small baskets, then without bruising put them into crates, boxes or new clean barrels, rejecting everything of an inferior grade, for mar-

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ket, using them for cider or some other purpose. After packing carefully and securely, I place them in a spring wagon and start for the market, driving slowly. On arrival, the dealer inquires, "What have you got?" I describe them as well as I can, to which he replies, "O, they are Wisconsin apples, I'll give you forty cents for them." "No," I say, "I want eighty cents." He turns away saying, "forty cents is all they are worth, for I bought of Mr. so and so for that yesterday, and he will bring more in a day or two." Arguing awhile to convince him of the superior condition in which my apples are, I leave him, he still persisting "they are only Wisconsin apples, won't keep, can't sell them, haven't the flavor nor quality of eastern apples, as this is not a fruit country," etc. I go on with my load and after awhile meet with a customer who will talk sense, and being pleased with my fruit takes his supply, well satisfied with my price, telling me to call next time I come, saying "I don't see why everybody can't see the difference in the worth above the common method of handling, besides it being so much better coming fresh from the orchard, than that which is shipped from abroad." Strange as it may seem, I find five of the former to one of the latter kind of customers, though I aim to avoid all the first when once found out.

While upon this subject I will describe my crate boxes which I find very convenient and would recommend them for every orchard or fruit man's use. Take common boards ten inches wide and saw off two pieces eleven inches long for the ends. Then take a bunch of lath and saw in two in the middle; nail four of these pieces on to the ends of the boards for the sides of the crate; with five on one side for the bottom, then one on each side of the top, so they can be set top of each other. When used for marketing, shake down and pack full, nailing on the other three pieces, thus making a nice bushel package convenient to handle in the wagon or fruit house. These can be made at odd times beforehand, and snugly packed away till wanted. I find them especially convenient and beneficial for marketing the early fruit in a retail way near at home. If the crates do not go with the apples, pack them away for another year's use.

Another idea of importance in selling is to have the apples sorted so as to appear uniform in size, packing the small ones by

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themselves, and sell for what they will bring. Don't understand me as recommending the use of crate boxes for all kinds of apples, only for convenience of handling in the orchard and the fruit house, for different kinds need very different handling. Most of the early and fall apples need to have access to air, while such as have a tendency to shrivel require close packages, such as the Fall Swaar and nearly all the Russets and some others, which if left open soon become tough and nearly worthless. Always be careful to have the packages pressed and secured closely before sending to market.

Now let us consider the keeping of apples. From this season's experience, having had to endure three weeks of unbroken August weather in the month of October, and now finding, as was generally apprehended, that apples handled in the ordinary way are not keeping, the question comes forcibly, what can we do in time to come to meet the same kind of emergency, to which our climate seems to be so subject. I have sought and am still hoping for a better answer than I am able to give at present. The importance of having suitably constructed fruit houses, and in readiness, forces itself upon my mind as a great necessity, which to a great degree is overlooked. As I have said before, an ordinary farm house cellar is a poor place for keeping apples; generally too warm and damp, being more or less stored with potatoes and other vegetables from which odors and gases escape that apples readily absorb, and which tend to hasten decay as well as to give bad flavors. What seems essential is, to be able to maintain an even, pure and low state of air. The Birdsall refrigerator system is without doubt good, but it seems rather impracticable for common use, as it is regulated by ice, and just at the season when most needed the ice fails. For from the first of September to the first of November is the time of all the year of vital importance as to how our fruit is handled, and although it may pass that time without decay, yet if the late keeping kinds have been subject to a condition for ripening, either on the tree or anywhere else, they are not in good condition for keeping through the winter.

Having had three years' experience in the use of my fruit-house built in 1876, I will here give a brief description of what it is and

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what it has proved to me. The size is 24x33 feet, two stories high, with cellar below. The walls are made with common fencing for studding, sheeted on both outside and in, then this space is all packed with tan-bark, except at each of the corners a space is left as a ventilating chimney, having a connection with the rooms of each story, by a trough or passage made under the joists of the floors (they being sealed underneath), these chimneys having a connection with the open atmosphere, and are provided with shutters to be used at will. Furring is placed upon the inside sheeting, and another lining of matched stuff, which with double doors and windows, makes a building in a measure impervious to heat or cold. While the building proves of great value, I do not consider the ventilating system complete; for experience proves that currents of the atmosphere are not controlled upon the same principle as those of fire and smoke in common chimneys, so to determine this subject requires much scientific study and careful application, to which we need to give earnest attention.

Soon as frosty nights commence, the temperature of the building is easily controlled by opening the doors and windows at night, and closing in the morning, which will give a satisfactory temperature for three or four days of continued warm weather, but when we have three or four weeks of continuous hot weather, as we seem to be subject to, I feel the need of counsel, and that there is room for our most cultured intellects to give their best thoughts practically to the subject. A little fire may be needed in extremely cold weather.

In conclusion, I would repeat in short, general principles, as safe to act upon:

Have your packages ready on hand before apples are ripe.

Commence picking before the apples are ripe enough to fall.

Never shake, but pick and sort with careful handling.

Use none but clean, inviting looking packages, and always pack snug and full.

If you have a fair market accessible, dispose of your surplus as soon as ready, and not wait for it to become mellow.

Never attempt to get rid of poor or inferior apples by mixing with good ones.

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REPORTS OF LOCAL SOCIETIES.

BROWN COUNTY HORTICULTURAL AND AGRICULTURAL SOCIETY.

The society has held during the year eleven monthly meetings, that for the month of August having been intermitted on account of harvest work. All of these meetings have been held at the residences of the members of the society, as follows: Jan. 25, at Mr. Cowles'; Feb. 28, at Mr. Bennett's; March 22, at Mr. Potter's; April 26, at Mr. Rowbotham's; May 31, postponed to June 7 on account of the weather, at Mr. Lawrence's; June 26, at Mr. Smith's; July 19, at Mr. Davis'; Sept. 5, at Mr. Gibson's; Oct. 12, at Col. Robinson's place; Nov. 15, at Mr. Smith's; Dec. 20, at Mr. Pamperin's. The meetings have all been well attended, some of them largely, by members and visitors.

A formal address was delivered at the May meeting, by R. D. Torrey, Secretary of the Northern Wisconsin Agricultural and Mechanical Society, the only one coming from outside our own membership. Subject as designated by the speaker, "Practical Thoughts."

A formal address was also delivered at the September meeting by the Rev. Wm. Crawford, of our own society, entitled, "Farming as an Education."

Papers upon the various subjects proposed for discussion at the successive monthly meetings have been prepared and read by Messrs. Abrams, Bennett, Burdon, Porter, Campbell, Green, Potter, Reynolds and Smith, printed copies of which, together with the addresses of Messrs. Torrey and Crawford, are entered in the society's scrap book. Many subordinate and collateral topics have been incidentally considered, and much valuable knowledge and experience brought out in the course of the informal

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colloquies uniformly ensuing on the reading of prepared papers and the formal discussion of appointed subjects. It is worthy of observation that a report of the entire proceedings of our April meeting held at Vice President Rowbotham's, was, at the special request of the Secretary of the State Horticultural Society, transmitted to that officer for publication in the Transactions of said society for 1878–9, and that the same does appear in full, including the articles read at that meeting, in said volume of Transactions on page 316 and following. The society should remember, also, that this was done to furnish to other societies of the state an illustration of our method of conducting meetings as a model for their guidance or imitation.

In this report of meetings it is our privilege and honor to include the semi-annual session of the State Horticultural Society, held in this city on the 26th and 27th of June. A full report of the proceedings at this session is placed in the society's scrap book at pages 39 and following, and perhaps nothing need be added in this review to what there appears, except that the meeting was regarded by the members of the State Society as one of the pleasantest and most successful ever held by that body. Our members, also, doubtless realize that it gave the work of Brown County Society an impetus the force of which will not die away for many a year, and that an influence went forth from that meeting favorable in the highest degree to the advancement of the interests of horticulture in this county.

An exhibition of small fruits and flowers, and a festival, was held in connection with the meeting of the State Association, and fully demonstrated both that abundance of material for such an exhibit can as readily be supplied from this city and vicinity, and of as great variety and beauty, as from any locality in the state; and that, as an educative instrumentality, no measure at the command of the society can be manipulated with greater efficiency than such social gatherings and fruit and floral displays.

About twenty-five volumes of the transactions of the Department of Agriculture at Washington for the year 1878, thirty volumes of the Transactions of the Northern Wisconsin Agricultural and Mechanical Association for 1878–9, and ninety volumes

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of the State Horticultural Society for the same year have been received and distributed among the members and other residents of the county devoted to the advancement of the interests of horticulture and husbandry.

At the date of the last annual report, the membership of the society consisted of fifty-eight active male members and four honorary male and twelve honorary female members, total 74. During the year there have been added eleven active members and four honorary female members by special nomination, and fifty-four others by general resolution, constituting the wives of all married men of the society honorary members by virtue of the membership of their husbands.

The distinction of life membership has also been established, and two of the active members duly invested with that rank.

This gives the following as our present membership in classified arrangement, viz.:

Active life members	2	
Active annual members	67	
Total active membership	—	69
Honorary male members	4	
Honorary female members	68	
Total honorary membership	—	72
Whole number of members of both classes		141

The society began its existence six years ago this month with a membership of ten persons, one of whom has since then been transferred from all human companionships to that of another world of beings.

In this connection the secretary suggests that since the distinction of life membership has been inaugurated in this society, it seems proper and perhaps necessary to determine the conditions on which it can be acquired; and also to fix upon a proper designation for the class of active members not thus distinguished. In the above classification they are described as annual, the term usually appropriated to such use. In the state society, and in others generally where like distinctions of membership prevail, the classes are usually designated as life and annual members.

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It seems also necessary that the society should adopt some rule fixing a limit to the term of membership of such persons as persistently neglect to pay their annual dues, otherwise they may, without the authority of the society, constitute themselves life members by forever neglecting such payment.

It must be quite apparent that the operations of the society for the past year, as above comprehensively related, have disseminated among the farming population much useful information, the practical benefits of which must, as we fully believe, appear even in the coming season in extended cultivation of the soil, improved methods, more abundant harvests and richer pecuniary rewards. Add to this the happy social influences and the increased disposition to seek for information through one of its legitimate channels, the public press and published periodicals, and Brown County Horticultural and Agricultural Society has large ground of encouragement to continue its beneficent labors in behalf of the interest of horticulture and husbandry in this county.

The following address was delivered before the society at a picnic held September 6, 1879:

THE EDUCATING INFLUENCE OF FARM LIFE.

REV. WILLIAM CRAWFORD, D. D.

Mr. President, Ladies and Gentlemen: — In looking over the work of our society for the past three years, I think we are fairly entitled to congratulate ourselves upon what it is doing as an educational force among the farmers of our county. It not only affords us, one day in every month, a grateful respite from toil, an inspiring ride, an ample dinner, and leisure for exchanging the compliments of the season with our neighbors and friends, but — what is much more — it stimulates inquiry, diffuses information, wakens emulation, and makes the experience of the most skillful farmers the common property of all. This society is doing for the country what the literary clubs are doing for the city, in quickening thought, and introducing new methods and higher standards. These monthly meetings mark the coming in among us of a new epoch in agriculture.

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But this society, with its essays, addresses and discussions, is not the only educational institute for our farmers; farming is in itself an education. Instead of being dull, monotonous, prosaic drudgery, as many imagine, it is a calling fitted by its very nature to call the mental and moral powers into activity, and to foster some of the most desirable traits of character. This is the point which I shall endeavor to illustrate in what I shall say to you to-day. It would be presumptuous in me to undertake to teach you aught in regard to stock or crops; but I may perhaps throw out some hopeful hints in regard to farming as an education.

It will at once be conceded that an occupation which keeps the mind awake is better than one that is merely mechanical. One sort of work not only requires intelligence, but also promotes it, while another is but a treadmill movement, in which a sluggish soul will be always sinking into a deeper sluggishness. On this point Mr. Smiles writes (in his life of George Stephenson): "There is a peculiar fascination about an engine to the intelligent workman who watches and feeds it. It is almost sublime in its untiring industry and quiet power; capable of performing the most gigantic work, yet so docile that a child's hand may guide it. No wonder, therefore, that the workman who is the daily companion of this lifelike machine, and is constantly watching it with anxious care, at length comes to regard it with a degree of personal interest, speaking of it often in terms of glowing admiration. This daily contemplation of the steam-engine, and the sight of its steady action, is an education of itself to the ingenious and thoughtful workman. It is certainly a striking and remarkable fact that nearly all that has been done for the improvement of the steam-engine has been accomplished not by philosophers and scientific men, but by laborers, mechanics and engine-men."

Now the farmer's work is, in like manner, a perpetual school, requiring observation, tact, judgment and foresight, as well as muscular exertion. He must understand the qualities of his soil and the nature of various fertilizers; must select from many kinds of crops, those which he can manage to best advantage; must watch the weather and choose the fit times for planting, tending,

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harvesting; must use large knowledge and good sense in raising his stock and treating them according to their tempers and requirements. His work is always changing; every month brings something new; and if he does but intelligently meet his ever shifting responsibilities, he must needs become a man of ready resources and practical wisdom.

The farmer is not expected to be a bookish man; but if he simply keeps his eyes open and his mind alert, he acquires a large stock of knowledge equivalent to that found in books. He learns much of the chemical elements to be found in his soils, how they act when brought together, what effects they produce on the various forms of vegetable life; and so he becomes a practical chemist though he may not use the names most familiar in the laboratory. He cannot help watching the common birds, listening to their songs, noticing their plumage, nests, eggs, manner of life, and migrations, and so he becomes, to some extent, an ornithologist, though he would not call himself by so long a name. He learns about the trees, their leaves, and bark, and fibre, and fruit; he knows the flowers, their times of springing and dying, the places where they grow, their form, color and fragrance; he is familiar with the grasses, roots, grains; and so, without acquiring the long Latin names, he is, in effect, a botanist. In the exercise of his natural curiosity, and also as a measure of self-defense, he learns much about the insects; he watches them in the larva state, and when they spin their cocoons, and when they emerge as brilliant butterflies or moths; he is an entomologist, though he might be surprised and confounded if any one should apply to him so formidable a title. It is clear at a glance, that his range of knowledge must be broad, especially in natural science. For myself, I think that the best part of what I know about birds and plants and insects and trees was acquired while I was a boy upon a farm. A few days ago a gardener living on one of the lakes near the capital took me in his boat, and rowed me along the shore of his land, entertaining me not only with his original and acute observations, but also by his eager interest in every moss and vine, and movement of the water and flight of fowl. I was impressed by the extent of the acquisitions which had come to him naturally

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while he was pursuing his calling; nor was I surprised when I afterwards learned that one of the professors in the university valued him highly, not only as a friend, but as a most useful helper in the study of nature.

Farming affords large occasion for the cultivation of a fine sensibility, and a taste for what is beautiful and grand. To feed stock and notice their dispositions and traits of character (for animals have traits as marked and distinct as those of men), to look into the great, mild eyes of oxen, to train spirited horses — all this develops humanity and discrimination, as well as furnishes a vast entertainment. What diversion in watching the growth of crops — the corn, for example, as it breaks the earth with its tender shoot, and as the leaf grows dark and broad, and as the tassel, the silk, and the full ears come each in its time! The gardener does not work because he must, grudging every pull of the hoe and wishing he were done; but it is a positive pleasure for him to see how well his vegetables are getting on, and to help them get on. The farmer beholds broad landscapes, the splendors of the sunset, and — what we in the city rarely see — the splendors of the sunrise, too. What a satisfaction to him to sit under the shade and eat the fruit of trees which his own hands have planted! How the processions of the seasons, with all its beauty and grandeur, is ever marching before his eyes!

The farmer learns how to take care of himself, and to be master of his faculties in trying emergencies. He knows how to do many things, and can work in many lines rather than in one, thus getting a faculty for turning quickly and a knack of always coming down on his feet. Put a boy from the city and one from the country side by side in a critical situation, on the mountain or on the sea, and the chances are that the country boy will quickest know what to do. The farmer gains compactness of muscle and steadiness of nerve. What we of the city toil for, by rowing and walking and archery, comes to him in the natural way and as a matter of course. There is no tonic like fresh air, and he quaffs it in perpetual draughts. He has strong digestion and sound sleep, and is not pale, tremulous and wakeful, like too many who live in the town.

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But farming not only develops the mind and body, but it naturally forms many habits and traits which, if not strictly moral and religious, are yet akin to what is moral and religious. A good farmer, to begin with, sets before himself a high ideal of what is possible for him to do. He seeks to get the best crops within his reach — not scanty and wretched ones, not those which are medium and passable, but the very best. One thing which makes one farmer leading and eminent among others is that he has larger ideas of what is attainable. He means to bring the soil to the highest fertility and to gather from it the fullest yield it is capable of. He will have the best seed that is grown; if there be any variety of wheat or corn which is of finer quality than others, he will find out what it is, and will have that kind and nothing worse. Not content to plod on in a stupid routine and get a bare living, he applies himself strenuously to make the most of his calling. And that is just the principle which distinguishes all who attain to any greatness. Too much importance cannot be attached to starting out with high ideals. It must be our settled and habitual purpose not to be dwarfed and stunted creatures; to mould ourselves after large patterns and not after poor and puny ones; to reach, not a decent and respectable mediocrity, but the best which is possible with the faculties and opportunities which God has bestowed upon us!

Again, a good farmer has the habit of living for the future. He is always looking forward. No day stands by itself, alone; it is only a preparation for the days which are to come after. The plowing of April is to be crowned by the harvesting of August. Thus the farmer is constantly using foresight and taking prudent means to secure the better things which Providence holds out for his attainment. And is not this the very habit which distinguishes every wise and virtuous man? Our glance should always run forward; in youth we should make provision for manhood, in manhood for old age, and in this world for the world that is to come. This thought, this scheme, this world — what will it grow to? What will it make for me, what will it make of me, next month, next year, and in the next life? The farmer, of necessity, must use serious calculation; his calling preaches to him impressively that "whatsoever a man soweth, that shall he also reap."

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Again, farming teaches perseverance. When grain has been sown it must be tended through all the season, until it comes to its ripeness and is stored in the barn. There are many difficulties to be overcome, weeds, drought, insects, storms; the farmer must work on with unfaltering purpose; should he lose heart or relapse into idleness, all his previous labor will go for nothing. Must he not then think of the words and seize the lesson of St. Paul, "Let us not be weary in well doing; for in due season we shall reap, if we faint not."

The farmer learns to make the best of things, even when they are not to his mind, and to go bravely through losses, instead of yielding to despair. It often happens that, through various mischances, he cannot gather a large crop. The weather was bad, or the seed was poor, or there was frost or blight. But he does not, on that account, lose hope; he is, rather, the more diligent to make the best of what is left, consoling himself, it may be, by the proverb that half a loaf is better than no bread. Now this is precisely the policy to be adopted in spiritual husbandry. When we cannot do as well as we would like, we must do as well as we can. The past cannot be mended; let us turn to the best account what is still ours. We may have had bad teaching when young; tormenting appetites may have become fastened upon us; health may have been broken by exposures; we may have entered into bad associations, and lost reputation and property; is that any reason why we should mope and grow sour, and complain of the world, and yield ourselves to misanthropy and despair? Is it not rather a reason why we should be the more diligent, and make something of what remains of life, and gather a little grain into the garner while yet we may?

Farming tends to make men sober in their expectations and plans. The merchant embarks in hazardous ventures, and hopes speedily to amass wealth and live in splendor; the farmer looks for slow gains by hard work. There is less of gaming in his calling than in most others. He is satisfied if by little and sure accumulations he can gather a moderate fortune in a lifetime. It is the method of nature, the method of Providence. So much toil and so much property, whether of money or of character —

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that is the law of creation. It is not the brilliant and dashing youth, impatient of industry, and eager for place and praise, who makes the greatest success of life; but he who, as the years go on, grows ever wiser and better, until he is fitted for any world to which the summons of God may call him.

But while the farmer is a slow man, he must needs be quick in seizing the opportunities which the seasons bring. He must hurry the grain into the earth in the spring, and grapple the weeds vigorously in summer, and urge forward the harvest in its time. And is not this, too, one of the great guiding lessons we all need,—to seize the occasion, to do everything at the moment when it can be done, to improve life as it passes, and not hope by diligence in our last hours to retrieve the losses of wasted years.

I trust I have said enough to show that farming is naturally a perpetual school for the sincere and industrious student. It keeps the intellect in activity, furnishes a large stock of knowledge, disciplines taste for what is beautiful, and kindly sympathy with living creatures, gives amplitude to the lungs and brawn to the arm; and it fosters habits akin to morality, such as that of doing the best with what we have, working with reference to the future, persevering against difficulties, carrying projects through to their conclusions, plucking success out of loss, making steady and sure gains, and seizing opportunities before they have passed away. I do not say that all farmers do *in fact* get the education offered them. A good college may send out many dolts: that is their fault and not that of their situation. Tilling the land, as the primitive calling, may be presumed to be one of the best. When God first formed man, an innocent, undisciplined, crude being, needing to be developed into the full use of his powers, He put him in a garden and gave him a charge to dress and keep it. That was the place where he could best be schooled into a stalwart and holy manhood.

I do not claim that farming has all possible advantages. It is not the only good calling. It has its hardships. It requires, doubtless, much sweat of face, and weariness of limb, and painful economy. But then it is free from many of the anxieties and feverish tossings and fierce temptations which oppress mercantile

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and professional life. No one may possess for himself *all* the favors of Providence. The peacock in the fable complained to Juno, his mistress, that sweetness of voice had been denied him, while the nightingale, which was but a plain bird, excelled in song. "And deservedly," replied Juno, "for it is not fitting that all good things should be conferred upon one."

My sister once remarked to me after we had been visiting together with some valued friends, that she always liked to go to their house, for everything was there done so quietly and sweetly, so courteously and happily, that she seemed to get a new idea of what family life could be. That, I think, is just what our society is doing — giving a new idea of what life on a farm may be. And I am very much mistaken if, as a result of these meetings, we do not gradually see many marked improvements coming into our rural districts. For one thing, there will be more attention to beauty and comfort in and about the house. Larger and more substantial homes will be erected; there will be more ornaments on the walls, more books on the tables, and a more liberal style of living. We do not expect that a farmer will do things in the same lavish manner as the merchant; he gets his profits more slowly, and hoards them more frugally. And while his farm is still new, and needing to be cleared, and perhaps encumbered with mortgages, he will not make much outlay for embellishment. But let him enjoy the luxuries within his reach. It will cost but little to start a few of the hard, slow-growing trees, whose shade shall be the delight of his old age, and of his children after him; a few trailing vines will give grace to the wall, a few bright flowers will give a cheerful gleam to the yard; and the fences and roadside can be kept so trim and tidy that they shall be a refreshment to the eye and the heart. He can have his weekly papers, secular and religious, and can add a new book now and then to his library,— not the worthless subscription books which the agents are always bringing to our doors, but books that are books. Let him look to it that his wife and children have something of recreation and stimulus in the home, that so the family life shall be kept fresh, sweet and inspiring,— not drowsy, moody and sad. There are color, music and poetry

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in the fields and woods; let them flow into the house and fill all the rooms with their brightness and joy.

It is usually said that the farmer feasts upon the best the earth can yield. But the superintendent of the insane asylum at Oshkosh has recently called attention to the fact that many of our farmers in northern Wisconsin do, in fact, stint themselves in diet, eating food which, if sufficient in quantity, is yet indigestible even to the strongest stomach. This, together with hard work and anxiety, must, in the course of years, tell upon the sturdiest constitution. Not a few break down permanently under the protracted strain. While visiting the asylum a few weeks since, I was shown several patients from the farming districts who had become hopelessly insane in consequence of poor feeding and overwork. It need not be said that this is poor economy. He who is careful to bring his crops and his cattle to the largest size and finest quality ought surely to study the laws of his own being, and to feed himself with a generous hand. "How much is a man better than a sheep!" Can you call that farmer successful who is himself the most stunted product of his husbandry?

I have spoken of the agricultural virtues as approaching the religious; the best farmer will foster them into practical religion. He will see the power and wisdom and goodness of God in grass and flowers, in birds and trees; and seeing, he will admire and adore. Beholding always the beauty of the divine order, he will strive to bring his own life into harmony with it, and will also seek to lead his household after him in the way of godliness. The poet Burns has drawn a charming picture of rural domestic life, in his Cotter's Saturday Night; but the glory of the picture is that all the simple joys of that unpretending home are touched and consecrated by a sincere piety. Who that has ever read the poem can cease to see Cotter's family as —

> "The cheerfu' supper done, wi' serious face
> They, round the ingle, form a circle wide;
> The sire turns o'er, wi' patriarchal grace,
> The big ha'-bible ance his father's pride!
> His bonnet rev'rently is laid aside,
> His lyart haffets wearin' thin and bare;
> Those strains that once did sweet in Zion glide

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He wales a portion with judicious care;
And 'Let us worship God!' he says with solemn air.
* * * * * *
Then kneeling down to heaven's eternal King,
The saint, the father, and the husband prays;
Hope springs exulting on triumphant wing
That thus they all shall meet in future days;
There ever bask in uncreated rays,
No more to sigh, or shed the bitter tear —
Together hymning their Creator's praise,
In such society, yet still more dear,
While circling time runs round in an eternal sphere."

Whatever other discipline farming might confer, this certainly would be its highest praise if it led to that knowledge of God wherein consists eternal life.

See to it that you make the most of your vocation. Izaak Walton, in his famous old book, The Complete Angler, indirectly gives some valuable suggestions as to what may be got from the most ordinary pursuits, by intelligent men. A fowler, a hunter, and a fisherman chance to come together in a morning walk; and, falling into a dispute as to the merits of their several vocations, they agree to entertain each other by saying in turn what each one can to commend his own. The fowler begins — going into an enthusiastic description of the air, the element of all life; tells about the various creatures that fly in it, and especially about the hawks used in his sport: — the hunter next praises the earth, and the herbs and flowers it produces, and the exhilaration and manly exercise of the chase: — and the fisherman, in his turn, waxes eloquent in praise of the water on which the ships move and in which the fish do swim, dwelling lovingly upon all the peaceful ways and contented meditations of the angler. I quote a few sentences from the fowler's description of the birds of the air.

"And first the lark," he says, "when she means to rejoice, to cheer herself and those that hear her; she then quits the earth, and sings as she ascends higher into the air, and having ended her heavenly employment, grows then mute and sad, to think she must descend to the dull earth, which she would not touch but for necessity. How do the blackbird and thrasher with their me-

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lodious voices bid welcome to the cheerful spring, and in their fixed months warble forth such ditties as no art or instrument can reach to? Nay, the smaller birds also do the like in their particular seasons, as namely, the leverock, the titlark, the linnet, and the honest robin, that loves mankind both alive and dead. But the nightingale, another of my airy creatures, breathes such sweet loud music out of her little instrumental throat, that it might make mankind think miracles are not ceased. He that at midnight, when the very laborer sleeps securely, should hear, as I have very often, the clear airs, the sweet descants, the natural rising and falling, the doubling and redoubling of her voice, might well be lifted above earth, and say, Lord what music hast thou provided for the saints in Heaven, when thou affordest bad men such music on earth!"

Now I do not think that many fowlers, or farmers, or tradesmen could talk in that way. But you will find many farmers and mechanics who are capable of such keen enjoyment of nature, and of like noble and generous sentiments. With an open, sympathetic, reverent mind, one will see truth and beauty everywhere, and it will be impossible for him to become a slave and a drudge. The elder Disraeli says of Roger Ascham that in his well known treatise on archery he "apologized for his amusement in a manner that evinced the scholar had not forgotten himself in the archer." So in the hard toil upon the farm, one need never forget that he is an intelligent, free, immortal being. While bending toward the earth, his soul may stand erect, and his inner eye may see meaning and value in the commonest things. Izaak Walton's sportsmen are not mere sportsmen; their talk is of poetry, and history, and religion. When Donald G. Mitchell writes about his farm at Edgewood, farming ceases to be hot, dusty, weary toil, and rises to the dignity of science and art. All work is noble if done in a noble spirit; it is holy if done with love to God and man. Let none despise manual labor and sigh for a daintier lot. Peter was taught by a vision not to call anything common or unclean. Let the farmer be proud that he belongs to what Mr. Emerson calls the "historic nobility which rests on the possession and use of land." Let him love his mother earth—*his* alma

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mater — which feeds him, and clothes him, and disciplines him by her gentleness and severity, and teaches him so many lessons of duty, and grants him so many occasions of joy, and which, when at last he has become weary and worn with the long toil of life, will smooth for him a soft bed, and lay him tenderly away to a welcome rest.

WORDEN REYNOLDS, *Secretary.*

FREEDOM HORTICULTURAL SOCIETY.

At the annual meeting of the Freedom Horticultural Society, held January 15, 1879, the following officers were chosen for the ensuing year:

President — Chas. Hirschinger, Baraboo.

Vice President — M. T. Nippert, Baraboo.

Treasurer — August Bender, Baraboo.

Secretary — Charles Clark, North Freedom.

Executive Committee — Edward Maxon, G. Dwinnell, J. M. Haynes, Freedom.

Delegate to the State Convention — Chas. Hirschinger, Baraboo.

CHARLES CLARK, *Secretary.*

GRAND CHUTE HORTICULTURAL SOCIETY.

This society has held four meetings the past year, at which the following subjects have been discussed, viz: "Floriculture," "The Orchard," "Transplanting and Repotting Plants," "Fall Work in Garden and Door-yard." Papers or selections have been read at each meeting, and the members manifest much interest in the discussions. The society has met with great discouragements in apple culture; many of our trees have died of blight, or unfavorable location, or improper soil, or cold winters, or dry summers, or from unknown causes, and those which have survived all these difficulties have suffered severely for two years past or been entirely destroyed by the Tent caterpillar. One orchard in this locality has but few trees left except crabs, and one of our members now counts his dead trees by the thousand; but we are not discouraged. If we must accept it as certain that some of our

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trees will die, we also believe that it is just as certain that with good care some of them will live; and the careful cultivator who plants a few trees each year will be almost certain to have a good supply for his table. The Tent caterpillar did not appear in as large numbers last season as the year previous. Various means were used to destroy them — hand-picking the eggs in early spring, burning the nests with kerosene, showering with soap suds and crushing with the hand. It is thought that all these methods combined greatly diminished their numbers, but we had very little fruit last season; in some orchards none at all for winter use. These discouragements have caused many to delay the planting of apple trees; other are setting a few each year. The society has ordered a quantity of the Whitney No. 20 crab, which will be set the coming spring.

The interest in small fruits is steadily increasing. Those who set strawberries a year and two years ago, are now anxious to enlarge their beds; those who have none are more determined than ever to set them next season. Some are growing the Philadelphia and Black Cap raspberry, a few have planted the Ancient Briton blackberry. There is much interest shown in grape culture; nearly all the members have set the following varieties, viz., Concord, Delaware, and Rogers No. 15.

Flowers are receiving more attention than formerly; the homes are few where there is not seen a bit of green vine or a blooming plant in the window; a few tulips have been set, and the dear old roses are still seen in many gardens; but the old time annuals and pretty flower beds have been somewhat neglected. It is hoped that another year will witness much improvement in lawns and dooryards. Time will reveal our success, and while we work and wait, hope promises that coming years will find all our homes adorned with flowers, and abundantly supplied with the fruits of the orchard and garden. At the annual meeting held January 24, G. G. Johnston was elected president, L. L. Randall, treasurer, and Mrs. D. Huntley, secretary. Papers were read on Pear Culture and Enemies of Horticulture, by A. F. Bounds and L. L. Randall; discussions following. This was the largest meeting held since the organization of the society.

MRS. D. HUNTLEY, *Secretary.*

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RICHLAND COUNTY HORTICULTURAL SOCIETY.

Officers: Hon. J. B. McGrew, president, Richland Center; A. G. James, vice president, Richland Center; A. L. Hatch, secretary, Ithaca; John Winn, treasurer, Richland Center.

Cash in treasury January 31, 1880, $8.00.

The annual fair will be held in connection with the County Agricultural Society, the latter society having voted our society $150 to defray expenses of premiums and to fit up floral hall for better exhibition of horticultural products. A meeting will be held in June to revise premium list and prepare for the fall fair.

A meeting for discussion was held with the Agricultural Society January 31, at which were shown some apples and grapes, including McMahon's bloom apple by Mr. J. Winn, and McMahon's white apple and Wilder grapes in good condition, by Mr. S. I. Freeborn.

Mr. S. I. Freeborn, of Ithaca, was elected a member of executive committee of Wisconsin State Horticultural Society as representative of this district.

A. L. HATCH, *Secretary.*

SAUK COUNTY HORTICULTURAL SOCIETY.

This society has held two public meetings during the past year. The summer meeting in June was a fair and festival. A large hall was well filled with a show of horticultural products, and the occasion was highly enjoyed by the members and visitors who attended.

The regular annual meeting was held on January 13, 1880. It was devoted to the reading of papers and discussions. The reports from the committees of observation showed but a moderate success in fruit culture during the past year. Late frosts in the spring seemed to have been the difficulty, still there was a fair amount of fruit. Apples did not keep well after they were gathered.

Reports were received from Wm. C. Cady, of Excelsior, S. Montross, of Winfield, James Stone, of Reedsburg, and Charles

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Hirschinger, of Freedom. In addition to these reports, several papers prepared for the occasion were read.

The annual address of the president, by Wm. Toole. A paper by J. W. Wood, entitled "Associations in Horticulture." "My Fernery," by President Toole. "A Plea for Wild Flowers," by Mrs. M. M. Davis. Two of these papers were read before the state convention.

The whole meeting was enlivened by the discussions of the subjects presented by practical men, as the several papers were read, especially the reports of the committee of observation. It was admitted that the two past years had been less favorable for fruit growing than many previous ones, yet no one seemed disheartened, and the conviction was forced upon those present that there is no cause for discouragement which may not be overcome by suitable precautions. There are but few farms in this region which do not present locations, where, with a proper selection of varieties, and good care, a sufficient amount of fruit may be raised for the needs of families, and even for export.

The officers elected for the ensuing year were as follows:

President — J. W. Wood, Baraboo.

Recording Secretary — Mrs. R. H. Strong, Baraboo.

Corresponding Secretary — Mrs. Henry Strong, Baraboo.

Treasurer — Wm. C. Warner, Baraboo.

Executive Committee — Mrs. D. D. Doane, Baraboo; Mrs. L. Crouch, Baraboo; Mrs. J. W. Wood, Baraboo; Wm. C. Cady, Excelsior; Mrs. A. P. Ellinwood, Reedsburg.

J. W. Wood was sent as delegate to the annual meeting of the State Horticultural Society, held in Madison, in February, 1880.

MRS. M. M. DAVIS, *Secretary.*

FERNS.

WM. TOOLE, PRESIDENT SAUK COUNTY HORTICULTURAL SOCIETY.

It is now five years since the Sauk County Horticultural Society was organized, and as a measure of time this might be looked upon as an important event in the history of our society. In carrying out its aims to promote the interests of horticulture,

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much good has been accomplished. Love for the beautiful has been promoted. As we compare the present with the past, we see that many flowers are grown by those who cultivated none before. Fruit culture has been placed on a more reliable basis. We know much better the capabilities of our climate and the value of our varieties. Pleasant acquaintances and even friendships have been formed by bringing together those whose home or social duties would otherwise have led them into different channels. We have learned to speak highly of the merits and think gently of the shortcomings of our fellow members. May it ever be thus. By our intercourse we have learned much that we might not have gathered from our own experience or derived from our investigations. To see the world as others see it, is sometimes to have the veil lifted from pictures of beauty which else would have remained hidden from our gaze. They who have cherished the most sanguine hopes are doubtless disappointed, but to me the lessons I have learned with you and from you will be of life-long value. The pleasant friends I have met have made the days brighter, and if in course of time the changes of fortune should take me far away from here, the pleasant words and friendly actions which I have received from members of this society will never be forgotten.

As a member of the society, wishing to do my part in the proceedings of the present annual meeting, I offer for your consideration a paper setting forth some of my own practical experience in the study and cultivation of ferns.

I wish you could see my fernery. The rockery would delight you, and the sight of the beautiful ferns with the accompanying wild plants, would create a desire for a bit of this wild beauty near your homes. Passing through the upper narrows of the Baraboo river, after drinking from one of the many clear bubbling springs for which the place is noted, and, perhaps, partaking of a lunch, for which our ride has given us an appetite, we leisurely contemplate the beauty of the surroundings.

Awe inspired, we gaze on the masses of rock towering above us, the shattered fragments piled up at the base of the cliff, and, wondering at the mighty forces which wrought such changes, we

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feel as if in the presence of the Creator. We fain would linger on our way to pluck the beautiful wild flower, and gather bright green mosses, or to secure a tuft of that beauty among ferns, Asplenium Trichomanes. The deep shade of evergreens and broad leaved trees, seems to invite us to enter their cool retreat this warm July day. Far overhead on a shelving rock, lovely branches of Harebells, bending to greet us as we pass, tempt us to rashly secure them, but our guide tells us that we must hasten on as the day will be too short, and, viewing rapidly filling lunch baskets and handkerchiefs, advises us to "throw that stuff away, and not lug it around, for there is more we will want, where the walking ferns are."

We soon pass crystal rock, and with the road, leave the winding wall of cliff and crag, and giddy height, soon to meet the last point of rocks, jutting out, like bulwarks of defense, against the destroying march of improvement. Rounding this point and pausing to admire the last of the beautiful springs on that side of the Narrows, we peer into the deep, dark shadows of hemlock, birch and pine. Our guide tells us, that in there is where the walking ferns are, and we decide we will not pass them by, for there too is my fernery.

Among the underbrush which screens the approach to the rocks we find rare and beautiful ferns which none of our party are wise enough to name, and here and there a Moonwort fern, while Maidenhair, graceful and luxuriant, seems too common to be admired. At length we come out on a long slope of shaded hillside, where the larger ferns predominate.

Goodyera, with its curiously marked leaves, we find in patches. Partridge berry, with its pure white, fringed, twin blossoms, is trailing over the ground, and our already well-filled baskets are crowded to make room for more fern case supplies. The plants of Wakerobin, Smilacinas, Twistfoot, Hepaticas and others, remind us of the beautiful spring blossoms lately passed away, while higher up are budding Princess Pine, and Chickweed, Wintergreen with its starry blossoms. Soon other masses of rock are before us, on some of which young Hemlocks are striving with Polypodys for possession, while they make a crown of glory where once was barren rocks.

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Of the shield ferns, Aspidium Spinulosum, with its finely cut foliage, and Aspidium Marginale with its bluish green hue, prompt us to provide a store of dried ferns for winter use. Exclamations of delight from some of our party, cause us to inquire as to the cause, and we are called to see the climbing ferns. As we see the long, slender fronds, with their rolled ends — seemingly provided for interminable growth — entangled by surmounting herbage, we do not wonder that Cystopteris Bulbifera is mistaken for a climbing fern.

Clambering over trunks of fallen trees, and up through cavernous clefts of rocks, we see such variety of fern and moss that we wish some of us were more versed in cryptogamic lore. Great masses of rocks are all about us. On the broad table-like tops of some, Polypodys, with their dark shining green fronds, stand erect among the mosses, or sway about in the breeze. Walking ferns we have found at last, and some of them with that most graceful of club mosses, Lycopodium lucidulum, we bear away to grace some Wardian case. Bolitus, and other curious forms of vegetable growth, are clinging to trunks of fallen trees, and here and there we find the long gray-green, vine-like moss, which has dropped from overhanging hemlock branches. Broad sheets of moss, seemingly in endless variety, drape the sides of the rocks, and it seems as if all nature felt it a summer duty to grow and be beautiful, while each plant in its luxuriance appears striving to outdo its neighbor in fulfilling this end of existence.

Virginia creepers leave the trees and strive with the mosses to cover the rocks. Some of the mosses seem fern-like, in grace and beauty, and almost rival in proportions the delicate Asplenium Trichomanes growing in clefts of rock alongside. More walking ferns are here, and still more we find of the curious or beautiful which we wish to carry away, but the lengthening shadows tell us that the long summer day soon must end. Returning over the higher ground, we halt above the point of rocks to admire the beautiful scene below and around us. A passing train of cars crossing the river below, seems like an intrusion on the wildness of the scene, and we feel resentment at the presence of shanties, almost beneath us, which seem like blots to mar the picture. As

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we prepare to descend, I feel regret to think that so much must give way before the march of improvement, for I know that some day my fernery will be of the past. The woodman's axe will clear away the evergreens, and drying winds with flocks of sheep will strip the place of fern and moss, but my rockery they cannot destroy, and as I view in the distance the work of quarrymen while they strip the overlapping sandstone from metamorphic rock, exulting, I thank God, that quartzite is too hard for stone-cutters' tools, for thus I know, that though the rocks may be shorn of some of their adornments, their grandeur will not all be destroyed.

Our impatient horses are soon bearing us quickly homeward, and we enjoy our ride through the cool breeze at the close of a warm summer day. As we sit on the porch in the twilight, we talk of what we wish to do, of the ferneries we will have, and ere I answer questions of how to do, I will tell of the fernery which I hope to some time have.

Near where the overflow of our spring breaks forth from the hillside, higher than midway from the top of the bluff spur to the valley below, a thrifty grove of oaks, seeming pendant from the fringe of trees that encircles the hilltop, has been allowed to stand on the northeast slope to protect the spring from summer heat and winter frost. Here years ago the Flowering Ferns, Claytons and Cinnamomea grew, with Shield Fern and Maidenhair above, and here again they shall flourish below the rocks which will be placed to support and protect; Polypodys, Walking Leaf, Beech Ferns and Asplenium with mosses, and Lycopodiums. Limestone I must have for the little Cliff Brake, but no drift-worn boulder will find here a place, for Nature, however poorly imitated, shall not be outdone.

Out where the breeze and sunshine may reach them, some of the rocks must extend, that Woodsie Ilvensis in its new home, may not miss the airy cliff where it has been its wont to flourish. Broken rocks will furnish a congenial place for Cystopteris, not far above Moonwort Fern, and lowest of all, the broad leaved Onoclea, will be placed from the damp meadow; while our common Brake may ramble as it will. Sedges and Superb Lily, and

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many an airy grass, may keep our meadow fern company, with Pitcher plant, and fragrant Bedstraw and Cranberry perhaps near by. Early spring flowers will be here to welcome us, and of summer bloom, all for which room can be spared will find a place. In autumn, Bunchberry, with red and speckled fruit of Smilacina, pendulous Solomon Seal, grape like Smilax, and showy Indian Turnip, will be fit company for autumn leaves. Wild shrubs and vines must not be forgotten, for we shall prize the fragrance and beauty of flowers or fruit, of Viburnums, Cornells, Euonymus, Moonseed, Bittersweet, Clematis, Wild Yam, Woodbine, American Ivy and wild Grape.

Our grove will not be large enough for all that should have a place, but more must be planted to make it seem complete. Hemlocks must be added that the shade may be more dense, while drooping willow and pendulous white elm will give graceful outline to the outer edge of the grove. Higher up, the Lombardy poplar, spire like, will seem to point from this place of beauty to beauty's source. Above the fringe of trees, a belt and clumps of evergreens will grow in beauty, when my ferns and I have passed away, and they who from a distance see them, like a crown of winter's green, will think the place more beautiful for the work of him who placed them there.

Would that farmers could but realize how much is within their power to preserve or add to the beauty of the landscape, or to the interest which nature gives to all their surroundings. The man of wealth uses his means to beautify his few acres with, landscape art, winding drives, and broken views of grove, or glen, or rocky brow; gladden our sight with his expression of taste for the beautiful; but God has furnished us with graceful slope, and rugged steep, and we may make or mar the beauty of what He has done. We have only to add a little, or take a little away, or save still more of clumps of birch, or poplar grove, or spare some ancient pine or oak, or plant a few evergreens where none have been, and they will please the sight of others for miles away, and through years to come.

We love the beautiful not alone for pleasure to ourselves, but also that others may enjoy what we possess; and yet we in the

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country neglect the means which others have not, whereby through the summer and winter we may cause the landscape to be more beautiful to all who can appreciate nature's loveliness. "But you are forgetting the fernery," says one of the company. "What shall I do to have one?" First, we must select a place for it; one that can be seen from the street is desired, but when each season we have the hottest, dryest time ever known, we feel that dust and ferns should be kept as far apart as may be.

Shade we must have, and I would like to speak of garden walls; but we well content ourselves with the north side of a high fence, or the nook open to the northeast, formed by the angles of the dwelling house. Earth from the woods must be brought to take the place of the sandy garden soil.

The fence may be draped with Clematis and Virginia Creeper. Rocks you will need, that the smaller rock-loving ferns may not be hidden and seem out of place. Use the rocks only for the good of the ferns, and so place them that the soil in the crevices will directly connect with the mass of earth below. Do not attempt a "rockery;" and select only such as have angles and corners, rejecting smooth, rounded boulders. The rocks are not an absolute necessity for the place, but the smaller ferns show to better advantage if raised above the level of the rest.

The larger ferns, like the Osmundas, Lady fern, Ostrich fern and the tallest Aspidiums, should be grouped together at either side with those of moderate height, like Maidenhair, Moonwort and Sensitive ferns, in front, while those raised above may occupy the central background. Young plants of the larger ferns are very delicate and graceful, and have a pretty effect when mixed among the rest, but the novice will sometimes mistake them for distinct species. Evergreen ferns, of which we have about half a dozen species, might be so placed with Lycopodiums, Rattlesnake Plantain, Mitchella, Adam-and-Eve and mosses, that in early winter the place will be attractive after the othe rs have died down.

The Walking Leaf, Polypody, Asplenium, Trichomanes, Aspidium Marginale, and Aspidium achrostichoide, are fully evergreen, while Aspidium spinulosum and Pellæa atropurpurea are nearly so. Loose, half decayed vegetable mould should be freely

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brought from where the ferns are gathered, that they may be planted with the same, and an annual dressing of this, with pulling out of weeds, will be all the cultivation needed. Commence the work of collecting the plants as early in the spring as you can, but most of them do not appear before the spring has well advanced, and many species cannot well be identified before the middle of June. The work of collecting and planting may be continued through the month, for, with careful shading and watering, ferns will bear more hardships than most people suppose.

A study of the habits of different species, when gathering them, will help to judge in preparing their home and arranging them in it. For success with the larger ferns, a deep, rich soil is necessary. For those who have not room, or time, for more elaborate preparations, a rustic box on a shaded porch, or in the parlor, or some other room where no fire is kept in the summer, will furnish an opportunity for a variety of the smaller species. Our earliest spring flowers might find a place in the fernery and increase its beauty without crowding, but nothing large or coarse should be planted there if the collection is small.

With the increasing interest in ferns shown by our society, probably many more of this interesting class of our native plants will be cultivated, and to assist others in making more complete collections, I here give the names of such species as I have identified, but my recollection tells me of several others, the names of which I am uncertain.

Common Names.	*Botanical Names.*
Polypody.	Polypodium Vulgare.
Maiden Hair.	Adiantum Pedatum.
Common Brake.	Pteris Aquilinia.
Cliff Brake.	Pellæa Atropurpurea.
Cliff Brake.	Asplenium Trichomanes.
Lady Fern.	Asplenium Filix-fœmina.
Walking Leaf.	Camptosorus Rhizophyllus.
Beech Fern.	Phegopteris Polypodioides.
Beech Fern.	Phegopteris Dryopteris.
Shield Ferns.	Aspidium Noveboracense.

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Common Names.	*Botanical Names.*
Shield Ferns.	Aspidium Spinulosum.
Shield Ferns.	Aspidium Marginale.
Shield Ferns.	Aspidium Achrostoichoides.
Shield Ferns.	Cystopteris Bulbifera.
Ostrich Fern.	Strutheropteris Germanica.
Sensitive Fern.	Onoclea Sensibilis.
Sensitive Fern.	Woodsia Ilvensis.
	The Flowering Ferns.
Clayton's Fern.	Osmunda Claytoniana.
Cinnamon Fern.	Osmunda Cinnamomea.
Royal Fern.	Osmunda Regalis.
Moonwort Fern.	Botrychium Ternatum.
Moonwort Fern.	Botrychium Vergincum.

To which I think we might safely add Aspidium Thelypteris and Cystopteris Fragilis.

WAUPACA COUNTY HORTICULTURAL SOCIETY.

It has now been about six years since our society was organized. We have at the present time forty-nine members. We have two regular meetings in each year, one in March, when our officers are chosen, and one in September, for the exhibition of fruits, discussion of appropriate subjects, and a regular old-fashioned picnic, generally much enjoyed by our members and their wives.

At our meeting in March, 1879, some fine specimens of fruit were exhibited. President Wrightman had some of his already noted seedlings — the "Flora," "Wrightman," "Weyauwega," and "Wrightman's Blush." (How the last got its name is hard to tell, for our worthy president is not a *blushing man.*) The said apples are in good condition, and will keep till May or July, *if not eaten*, of which such good flavored apples would be in great danger. They are proving themselves hardy and worth trusting. Mr. Mathews had seven varieties in good condition.

DISCUSSION. — Mr. Balch would mulch the sod. Mr. Mathews believed in cultivating the orchard. The members generally seemed to favor close planting for most varieties.

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The Secretary would plant only one rod apart. Had the best success with trees this distance. Some would plant twenty feet apart, but none over that distance.

The society held its fall meeting September 9, 1879, at the house of Wm. Masters, in Royalton. There was a large attendance of the members and their wives, and it proved the most interesting meeting our society has ever had. Of course, it was not a great year with us for fruit. But, in spite of all our discouragement we had a good show of apples, and some that attracted much attention, especially a few of our Waupaca County Seedlings. We have a right to be just a little proud of some of these seedlings, which are coming into notice even in other states.

Mr. Balch had nine varieties of apples, very fine. He has some seedlings that are truly valuable.

Mr. Jenney had ten kinds, a nice looking lot.

Mr. Alden had twelve varieties. Eleven of them seedlings, some looking good enough to eat.

Mr. Mathews had twenty varieties, only one seedling. He also had some fine Bartlett pears.

Mr. Barker had nine varieties, very fair.

Mr. Wilson had one seedling apple, large, yellow, sweet, from seed of Golden Russet; thought to be hardy, of good flavor. The society named it "Wilson's Russet," and consider it worthy of trial.

E. W. Rhodes had eight kinds, a fair collection.

Royal Gibson had six varieties, looking well.

John Mack had ten kinds, one a fine looking seedling.

Mrs. Helen Farley sent a basket containing eight or ten varieties, very nice.

Mr. Springer had ten varieties, nice; some of them his well-known seedlings. His "Wolf River" was especially prominent, as it always is wherever exhibited, either as a large apple *or a small pumpkin.* It originated on the farm of Jacob Steigler, in the town of Fremont, and has been brought into notice by Mr. Springer, who claims for it size, hardiness, beauty, and great productiveness, the original tree bearing generously nearly or quite every year.

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Hollis Gibson had five varieties, seedlings, promising well.

Grapes — Mr. Mathews had eleven kinds; Mr. Balch, two; Mr. Hubbard, fifteen; Mr. R. Gibson, three; Mr. Springer, ten.

Discussion — Mr. Mathews gave his experience in raising grapes. Could not learn everything from books; believes in cutting close; saves no bud from old wood; would not let them run over four or five feet; leaves only three or four buds; do not summer prune too much; get your bearing cane as near the ground as possible; prune in the fall; mulch three or four inches; put earth on the vine, then other mulch on top of that.

Mr. Balch — Have missed it heretofore in leaving too many old canes; shall cut closer in the future; shall cut away the old, and let this year's shoots grow for next year's fruiting; believe in using dirt mainly for mulching; let hens run in our plum orchards, and we can raise the fruit.

Here an "outsider" hesitatingly remarked, that he didn't think it paid to plant kinds of grapes that needed laying down and mulching, but he was at once ranked as a "know nothing," and promptly invited to take a back seat.

The present officers of our society are:

President — E. W. Wrightman, Weyauwega.

Vice President — A. V. Balch, Weyauwega.

Secretary — J. Wakefield, Fremont.

Treasurer — J. A. Mathews, Weyauwega.

Executive Committee — W. A. Springer, chairman, O. A. Rich, John Mack.

Delegate to State Society — A. V. Balch.

J. WAKEFIELD, *Secretary.*

FREMONT, April 10, 1880.

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COMMUNICATIONS.

CANKER WORMS.

Anisopteryx, *Vernata* and *Pometaria*. — Unfortunately many of our fruit growers have become well acquainted with these foes to the orchard, especially in the larva state, yet we occasionally hear of great injury being done to orchards by canker worms that build nests or gather in large clusters on the limbs or body of the trees. While it makes but little difference what the pests are called, provided their transformation and habits are understood, so that the proper means may be used for their destruction, it is usually the case that where a mistake in the name is made, it is followed by another in the application of the remedy. The result is readily seen, for example, of what avail will tar bands, or tin or liquid obstructions, be to the kind of canker worm above mentioned. How soon would one succeed in destroying the real canker worm, by waiting to crush them in clusters gathered on the limbs or bodies of the trees?

Again, many who are familiar with these pests, as worms, know little or nothing of the other stages through which they pass, and consequently cannot use the best, or at least all the means for their destruction. The rapidity with which these foes to the orchard have multiplied the past few years, appearing without previous warning here and there throughout the state, and the fact that where they have ever got a foothold they are rarely ever totally exterminated, but go on slowly but surely establishing other colonies, makes it important that the forms and habits of the foe in all stages of development should be known, and the most effective means be used for their destruction.

The true canker worm is now to be found in many parts of the state, and what is especially unfortunate for us, we have both

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kinds, the spring and fall varieties, the latter of which seems to be much more difficult to destroy. For two years past, as far as I have been able to examine, the *A. pometaria* have been much the most numerous. For a long time the two varieties were regarded as one and the same, and some hold to this opinion still, but a careful observation will reveal so many and so striking points of difference, and that, too, so constant and unvarying, that they must be regarded as two varieties of the same species.

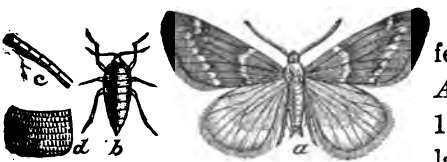

FIG. 13.—CANKER WORM MOTH—MALE AND FEMALE. *A. pometaria.*

To note the points of difference, the male moth of the *Anisepteryx pometaria* (Fig. 13, *a*) is generally a little larger than that of the A. vernata, and the primary wings are thicker, and somewhat darker in color, and more glossy; they are also crossed with two quite distinct but irregular white lines, the outer one broken and heavier near the front of the wing. The hind wings of the pometaria are usually about the same shade as the fore wings of the vernata, with a dusky spot nearly in the center, and usually an irregular and quite indistinct band of white crossing them, while those of the vernata are plain and of a lighter color. The fore wings of the vernata (Fig. 14, *a*) are brownish grey in color, silky in appearance, with three irregular brown lines crossing them and a dull whitish band nearer the outer margin, ending in a short black line at the apex of the wing. The hind wings are of a lighter shade than the fore wings, and without markings except a dusky spot near the center.

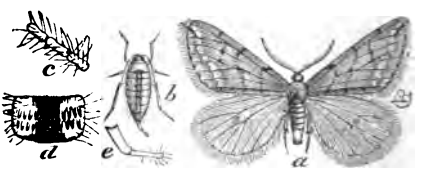

FIG. 14.—CANKER WORM MOTH—MALE AND FEMALE. *A. vernata.*

The female moths of both species are without wings, and while they have a general resemblance that might lead the casual observer to pronounce them one and the same, a slight examination will reveal quite marked points of difference. The female of the vernata has a dark brownish stripe, or band, down the back, while the other is of a uniform color; again, the first has an ovipositor

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(Fig. 14, *e*), which is entirely wanting in the other. There is also a difference in size and form, the pometaria being larger, and the abdomen more elongated. Another point of difference, which is seen alike in the male and female, is in the antennæ; those of the vernata have forty joints and are covered with short reddish spines (Fig. 14, *c*), while those of the pometaria have fifty joints and are smooth (Fig. 13, *c.*). Also the rings of the abdomen in both are marked in the same way (Fig. 13, 14, *d. d.*).

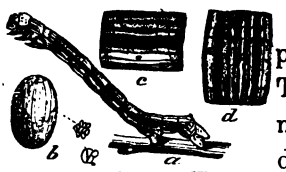

FIG. 15.—CANKER WORM.
A. vernata.

The form of the eggs and manner of depositing them also varies in the two species. Those of the vernata are oval (Fig. 15, *b.*), nearly the shape of a hen's egg, and are deposited in irregular masses, by means of the ovipositor, in crevices under the bark of the tree, or other material which will serve as a protection, while those of the pometaria are flattened at the ends and shaped like a flower pot, with a dark point in the center and a brown ring near the margin (Fig. 16, *a. b. c.*). These eggs are laid in clusters in exposed situations on the limbs and usually near the points where the young worms on hatching, will find their food. They are laid compactly in regular order, and are covered with glue to protect them from the wet and cold. The number of eggs laid by the pometaria is given by Prof. Riley as varying from 100 to 200, and those of the vernata from 50 to 150. In examining the larvæ it is found that those of the vernata have only five pair of legs, while the others have six, and that the vernata are usually smaller in size and of a darker color. There is often considerable variation in the color and markings of both species, but as said before, the color of the vernata is usually darker than that of the other, and the longitudinal stripes on the back and sides are much narrower and paler; *c.* in figure 15 represents a side and *d.* a back view of a magnified segment of the vernata, and *c. d.*, figure 16, the same respectively of the pometaria.

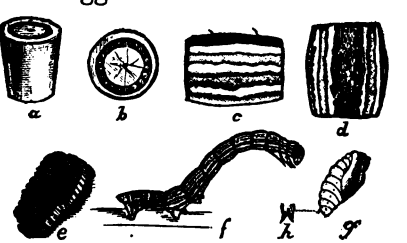

FIG. 16.—CANKER WORM AND EGGS.
A. pometaria.

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With the exception of the time of the transformation from the chrysalis state to the imago or moth form, and the consequent difference in the time of depositing the eggs, the general habits of the two species are identical, or nearly so. The moths of the pometaria are sometimes seen in October, and thence on through November, and in moderate weather, in December, January and February. Though seemingly delicate, they are very hardy, and are able to endure a great degree of cold; remaining torpid through severe weather, they become active when pleasant days come again, and complete their mission of providing for the perpetuation of their species throughout the late fall and in the winter months.

The moths of the vernata are sometimes seen in February, when the season is mild, but usually appear, in the greatest numbers, in March. The male moths are very active, and are often seen flying rapidly about, sometimes during the day, but more frequently in the early evening. They are usually classed as nocturnal in their habits, but some entomologists think that the period of their greatest activity is early in the evening. The female moth, being burdened with a mass of eggs, and without wings, is sluggish in her movements, but on emerging from the ground, makes the best time possible for the nearest tree, and crawls up the body to the limbs. After mating, she proceeds at once to deposit her eggs in the manner before mentioned; the vernata, under projections of the bark, dry leaves, or other protection; the pometaria, in exposed situations on the limbs.

On their first appearance, which is about the time the leaves expand, the larvæ are so small as to escape observation unless they are present in large numbers, and a careful search is made. If the weather is severe, they seek shelter in the opening buds and blossoms. When very numerous, the foliage of the trees soon assumes a withered, scorched appearance. They devour the leaves with great greediness, and often entirely strip the trees infested. When not eating, they may be found stretched out at full length on the under side of the leaves, but on being disturbed, they will drop, suspended by a silk web. They come to maturity in about four weeks, when they are nearly or quite an inch in

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length; the pometaria is usually longer, sometimes an inch and a quarter and more. When full grown, they soon leave the trees, some crawling down the body, but more frequently letting themselves down by a thread. Reaching the ground, they at once burrow into the earth from two to six inches, and go into the chrysalis state. The chrysalis of the vernata is a frail earthen shell, lined with a few threads of silk, but that of the pometaria is much tougher, being woven firmly with silk, and glued to or incorporated with an outer crust of earth.

It is this habit of letting themselves down by a web when about to go into the chrysalis state, and also hanging thus suspended during the earlier periods of their growth, that contributes to their spread. Being caught by passing animals, persons, and vehicles, they are often carried great distances, and new colonies are formed. As the females are wingless, they would make but slow progress from place to place, but for this.

REMEDIES.— Where we are acquainted with the habits and all the various transformations of our insect foes, we are often able to meet them at different points, and, as it were, get a cross fire on them, and make the work of destruction more complete. So it is with the canker worm. By knowing its history through all the stages of its existence, we can choose the vulnerable points in each.

1. As the female moth is wingless, she is compelled to crawl up the body of the tree. If we can prevent her doing this, or laying her eggs so that the young worms can pass up, we save the tree. Various expedients have been devised to effect this; strips of tin have been used, so arranged that when the moth attempts to pass over, she will fall back to the ground. Troughs have been bound around the body of the trees, and then filled with oil or some liquid substance which she cannot pass over; but the most common and most effectual has been closely fitting bands to the body of the trees, smeared with tar, refuse molasses, printers' ink, or some viscid substance which will hold the moth fast as soon as she ventures on it. Close attention is required to make this remedy effectual, lest the sticky substance be washed off by rains, or becomes hard through drying up or the action of the cold. It

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will be necessary to renew the application a number of times during the season, and to watch closely that bridges be not formed over it. The band should fit so closely to the tree that the moths or young worms may not pass behind it and so reach the leaves. Often the moth, thus checked, will deposit her eggs near the obstruction, and when they hatch out, the young worms, "on destruction bent," will get up the tree if they can. It is a serious drawback to this plan that these bands must be applied so early in the fall, and be seen to all through the winter and spring months whenever the weather is warm and pleasant.

2. Much can be done with the plow and harrow in destroying them while in the chrysalis state. Many of the cells will be broken by turning over the soil, and by harrowing others will be exposed to the birds and weather. As the cocoons of the pometaria are much stronger than the others, and the moths come out early in the season, this remedy is not as effectual with them, but if the plowing is done early in the fall many will be destroyed. The good results attendant upon late fall plowing have been so marked in many instances where tried, that it is regarded by some as a sure remedy, but its efficiency is doubtless largely dependent on the condition of the soil when plowed, and the character of the following winter.

3. By jarring the trees from time to time, while the worms are feeding, many of them will drop toward the ground, and as they are thus suspended by their webs they can be raked in with a stick and dropped on a sheet or into water and destroyed. Many of them can be disposed of in this way, but the process is slow and tedious, and as far as extermination is concerned, impracticable, unless the trees are small and few in number.

4. The remedy usually tried and perhaps the best, all things considered, is the use of poison, dusting or showering the trees as soon as the worms are discovered, with a preparation of Paris Green, arsenic or a more recent compound, London Purple. With a garden pump or an atomizer prepared for the purpose, this is quickly done, and where the application is properly made, is very effectual, a second being seldom needed. Of the three poisons named the first is the most expensive and the most dangerous to

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use, and for this reason either of the other two are to be preferred. Arsenic is the poison most generally used. Where the trees are large the best mode of application is in a liquid form, by means of a pump through a fine hose, or atomizer.

In making the solution it is better to boil the arsenic a short time in a small quantity of water (say half a pound of arsenic in one or two gallons of water), then add water in the proportion of forty or fifty gallons to half a pound of arsenic. The strength of the crude arsenic varies so much that is impossible to give any definite rule as to the amount to be used, but where of average strength one pound to eighty or one hundred gallons of water will be sufficient. If too strong it will scorch the leaves and be injurious. The strength needed to destroy the worms is much below that which will prove hurtful to the foliage. As the arsenic is insoluble, it only mixes with the water, and unless care is taken to stir it very often, the poison suspended in the water will settle, and the lower part of the mixture will be much too strong. It should not only be stirred frequently, while being applied, but as the mixture becomes reduced in quantity, more water should be added. A still day should be chosen in which to shower the trees, and it should be done from the windward side. Care should be taken not to inhale the fumes while boiling or the spray when being applied, and the things used should be thoroughly cleaned before using them for other purposes. One objection made to the use of arsenic in this way is, that being colorless, there is nothing to indicate the poisonous character of the mixture, or that there is any danger in using the vessels in which it has been mixed, but if care is taken to thoroughly cleanse them before putting away, or, when used, to place them where they can not be reached by man or beast, there will be no trouble.

A new compound, London Purple, has been found, within a year or two, to be valuable for the destruction of insects. By some it is regarded as superior to either arsenic or Paris Green. It is a rank poison (mainly arsenic), but it is claimed that it is less likely to injure the leaves and yet is more deadly in its effect on insect life than either of the others, and is also much the cheapest. It is largely composed of arsenic and lime, deposited

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as a sediment in the process of making aniline dyes from coal oil. It also retains sufficient of the dye to serve as a danger signal to prevent an improper use of the liquid or the articles which have been used in applying it. It is much more finely pulverized than arsenic or Paris Green, and hence is more readily mixed with water, and seems also to penetrate the leaves more thoroughly and to retain its destructive power much longer, owing doubtless to the benzole or coal oil still contained in the powder. It can be applied in a dry, powdered condition, or mixed with water. Prof. Riley recommends that where used dry it be mixed in the proportion of one part of the powder to thirty-six of some diluent; and in a liquid form to use one-half a pound of the powder with fifty or fifty-five gallons of water.

All these applications kill by direct contact, and also by poisoning the leaves, so that they prove fatal to the worms eating them. Unless washed off by heavy rains soon after the application is made, the poison is absorbed, or deposited on the leaf, and retains its deadly power for some time, and hence, if the work is done thoroughly, but few worms will escape. By the use of these poisons, and the remedies given before, these enemies, long regarded as the worst and most impregnable of our insect foes, can be controlled; and if proper attention is given, and a thorough use is made of all the remedies, they may even be exterminated. Being very hardy insects, we can expect but little aid from hard winters and inclement seasons, and their insect foes seem to do little to hold them in check, so that our only hope lies in the persistent and thorough use of the means at our own command.

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INSECTS INJURIOUS TO THE CRANBERRY.

PROF. A. S. PACKARD, JR., SALEM, MASS.

The culture of cranberries is rapidly becoming one of some importance in the West, particularly in Wisconsin. There the principal insects, as I have been informed, are the fire-worm and fruit-worm, but we do not know whether these insects are the same as those found to be injurious to the cranberry in the East or not. I have attempted to bring together all that is known regarding the insects injurious to the cranberry, taken from my "Injurious Insects New and Little Known," my "Guide to the Study of Insects," and from unpublished notes. I have been indebted for much valuable information to W. C. Fish, formerly of Sandwich, Mass., and to Mr. F. G. Sanborn. No accounts of cranberry insects are to be found, so far as I am aware, in the works of any of our entomologists.

INSECTS AFFECTING THE LEAVES.

THE CRANBERRY SPANWORM (*Cidaria*, sp.).—The largest worm which is destructive to the leaves is a span-worm or inch-worm (*Cidaria*, species unknown). It was first made known by W. C. Fish, who states that it stripped the plants in Harwich, Mass., in August. On one bog "they destroyed nearly two acres of cranberry vines, eating off all the green leaves, the bog being as black in spots as though a fire had been over it." I have found that this caterpillar is also destructive in Essex county, Massachusetts. These worms are about the size of and have the same general appearance as a canker-worm. They are dull reddish-brown, simulating the color of the main stem of the plant. The owner of the bog flowed it with water so that it was completely covered, and the worms were killed. This is a rapid and

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effectual way of exterminating all insects affecting cranberry plants.

A specimen examined August 26 was of the size of the canker-worm. The head is rather deeply indented above, no wider than the thorax; anal plate long, acute, projecting over the end of the abdomen. The body is dull reddish-brown, simulating the color of the cranberry twigs; lineated finely and dotted with dark brown. Head speckled with brown, with a conspicuous transverse band across the vertex, with two rows of pale, irregular spots across the front; just above the spiracles a broad dusky band, above which are lighter and darker fine thread-lines; beneath paler, with a ventral clear line, edged with dark. The tip of the abdomen ends in two minute, acute tubercles tinged with reddish, and ending in a spinule, both situated under the anal plate, and concealed by it when the body is looked at from above. Length, 0.80 inch.

THE GLISTENING CRANBERRY MOTH (*Tortrix oxycoccana* Packard).—Of the extensive genus *Tortrix*, three species have been found to prey on the cranberry. The present species is said by Mr. F. G. Sanborn to feed upon cranberry vines. We have briefly described it in our "Guide to the Study of Insects," under the name of *Tortrix oxycoccana*. It was found flying October 4. The body is of a dark slate color, and the palpi, which are large and project well beyond the head, are of the same color, with a few bright reddish scales at the end of the second joint. The tuft of hairs on the tip of the abdomen is much paler than the rest of the body, and of the same color as the legs and the hind wings, being of a glistening gray color. The fore wings are of a uniform reddish-brown color, with a peculiar glistening or greasy hue. The red tint is due to scattered bright-red scales. There are no other spots or markings on the wing, and the fringe is mottled with red and gray scales as on the wings. On the hind wings the fringe is long, silky, glossy, grayish-white. Beneath, the fore wings are pale gray, the hind wings being paler than the fore wings. Length of the body, .25; expanse of the wings .64 of an inch. It may be readily known by the peculiar shining, greasy look, and by the rich, red scales scattered over the plain,

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unadorned fore wings. The habits of the caterpillar are not known.

THE YELLOW CRANBERRY WORM (*Tortrix vacciniivorana* Packard).— August 4, I received from New Jersey, through Mr. S. H. Scudder, specimens of this insect in all its stages, under the name of the "cranberry-worm." It seems to be a common insect in the cranberry-fields of New Jersey, but has not yet been found in the New England States. It was new to science, and was called the *Tortrix vacciniivorana*.

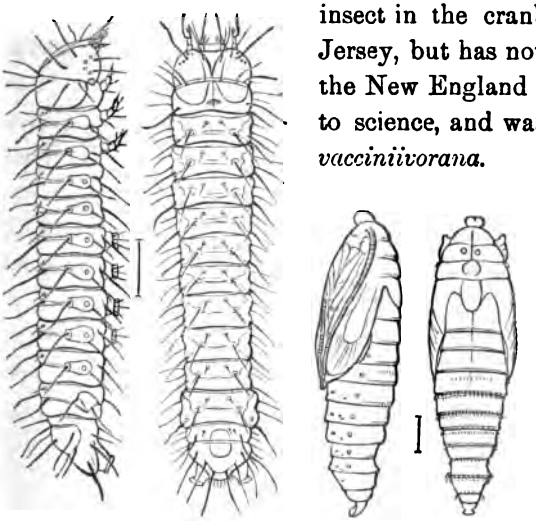

FIG. 17.— YELLOW CRANBERRY WORM AND PUPA.

The larva draws the leaves together with silken threads, transforming into a pupa within the mass. A single larva seems to select one twig or branch and eats the parenchyma from the upper surface of the leaves until every leaf or twig is injured, and the plant nearly as much destroyed as if the leaves were eaten up entirely. In this way each larva seems to eat the best part of about twelve leaves, which usually remain on the stalk, affording a shelter to the pupa, which is naked, partly sticking out of the leaves.

The larva is pale honey-yellow, with a slight greenish tinge. The head and prothoracic shield are pale honey-yellow, and the head is nearly as wide as the prothorax. The body tapers gradually to the tail, and is furnished with fine, sparse, pale hairs arising from prominent tubercles, the hairs being one-half as long as the body is wide. The four dorsal tubercles are arranged in a trapezoid, with a deep crease between the anterior and posterior pair. The thoracic feet are tipped with black. On each side of the base of the head is a lateral S-shaped blackish-brown linear band, the upper part of the S terminating on the top of the occi-

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put, the line being most distinct on the side of the head. The ocelli are black. It is .27 of an inch in length.

Mr. Trouvelot, who made the admirable drawings here engraved, wrote me as follows regarding its habits: "Like the larvæ of the *Hesperidæ*, as in *Eudamus* and *Tityrus*, this cranberry-worm sends off the excrement to some distance when it defecates. When it had built an imperfect cocoon, it was very careful to remove the pellets of excrement in it, by taking them with the mandibles and carrying them out."

The pupa is brown, rather slenderer than usual, with the vertex of the head prolonged into a large tubercle, surmounted by a round knob, which is rough, while the tubercle below is smooth; there is an angular projection on each side of the base of the tubercle, forming a shoulder to it. The wing-covers reach to the end of the third abdominal ring, while the antennæ reach to the end of the second pair of feet, which are parallel to the end of the second abdominal ring. There are two rows of teeth on the upper side of the abdominal rings; they are obsolete beneath, the posterior row being indicated by two remote minute tubercles. Length .25 of an inch.

The moth is rather undersized, with yellow wings, without any decided markings, but mottled with deep ochreous. It expands one-half of an inch.

THE RED-BANDED CRANBERRY TORTRIX (*Tortrix incertana*).—This *Tortrix*, described by Dr. Clemens under the name of *Tortrix incertana*, was originally sent to Mr. Sanborn by Miss Guild, of Walpole, Mass., where its larva is called the "cranberry-worm." According to the late Mr. C. T. Robinson, it is found in Texas, and northward to Ohio and Pennsylvania, as well as Massachusetts.

The body and fore wings are deep reddish-brown. The palpi are prominent, projecting farther than usual in front of the head. The head and thorax are ochreous-brown, with a large tuft of red hairs on the hinder margin of the thorax. The fore-wings are reddish-brown, and at the base clear light reddish-brown, bounded behind by acurved, broad, dark-brown band, which terminates just below the median vein; between this and the broad brown-red

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band, and situated on the inner edge of the ring, is a dull-silvery equilaterally-triangular spot. From the middle of the costa runs to the outer angle of the wing a broad dull-red band, one-half as wide as the ring, and suddenly narrowing on the costa. Beyond is a narrow hemispherical dark-red costal spot. Beyond the broad band the outer edge of the ring is clear silvery, except an oval brown spot. The fringe is reddish, silvery on the inner margin. The hind wings are pale, smoky, concolorous with the under side of the fore wings, while the under side of the hind wings is whitish. It expands .70 to .80 of an inch.

In the pupa the segments of the abdomen are divided by deep sutures, the edge being angulated, and with two dorsal rows of unusually small spines. The tip is prolonged into a long point nearly twice as long as wide, and giving rise to three pairs of curved minute filaments. Length, .34 of an inch.

THE RED STRIPED CRANBERRY WORM.— This worm I observed, September 20, to be common on the heads of cranberry-plants in Hamilton, Mass., drawing the leaves together, eating off one side of a leaf, either wholly or in part, and eating the parenchyma, leaving the reverse side untouched. Twelve or fourteen terminal leaves are usually thus eaten; sometimes the terminal leaves are not touched, the caterpillar working up from below. The leaves are either drawn together by a few silk threads, or there is a regular tube of silk situated between two leaves, the latter severed from their connection with the branch, but held in place by silk threads, the leaves consequently turning brown; the heads of the branches are thus withered for about an inch, so that patches of the cranberry-bed are brown and withered.

Body long and slender, tapering a little toward the head, but more toward the tail. Head about three-fourths as wide as the middle of the body. Pale testaceous with a few long hairs. Mandibles reddish, dusky at tips. Ocelli blackish. Prothorax unusually long, nearly as long as the head, elongate, lunate, with no markings on it, slightly wider than the head, but decidedly narrower than the succeeding segment. Body pale livid green, with six longitudinal pale-reddish lines, broken and irregular toward the head, but more distinct and wider toward the tail,

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so that the body looks darker and rather reddish posteriorly. On the front edge of the second and third rings a transverse row of six black minute warts giving rise to a hair, and a seventh one low down in the middle of the side. On the abdominal segments four dorsal black warts, the two anterior nearer together than the posterior, though not forming a decided trapezoid; on side of ring another black wart in line with the two anterior dorsal ones, and giving rise to a rather stout hair. Around the edge of the supra-anal plate a row of four black warts, and two median dorsal smaller warts. Beneath, livid-greenish, the three segments between the last pairs of feet with each a transverse straight row of minute black warts.

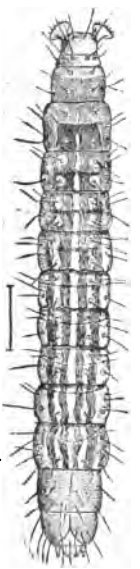

FIG. 18. — THE RED-STRIPED CRANBERRY WORM.

THE CRANBERRY-VINE WORM (*Anchylopera vacciniana* Packard).— Our account of this insect is taken as follows from our "Guide to the Study of Insects," while the figures are engraved from original drawing made by Mr. Emerton.

Mr. Fish has discovered an undescribed species which feeds on the cranberry, and which we may call the Cranberry Anchylopera (*A. vacciniana*). The moth is dark ash, the fore wings being whitish, dusted with brown and reddish scales, with white narrow bands on the costa, alternating with broader yellowish-brown bands, five of which are several times larger than the others; from four of them irregular indistinct lines cross the wing. The first line is situated just beyond the inner third of the wing, and is often obsolete. The second line is the largest, and is slightly bent once in the middle of the wing. There is a large brown spot parallel to the costa, being situated on the angle. The third line is oblique and stops before reaching the inner angle, and is forked on the costa, while the fourth line is a short apical diffuse irregular line. The apex of the wing is dark brown, and is a little more acute than usual in

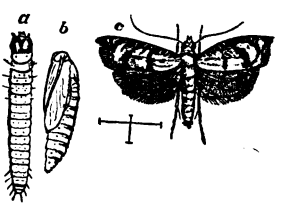

FIG. 19.—CRANBERRY-VINE WORM, ENLARGED.

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the genus. The length of a fore wing is .28 of an inch. It lays its eggs on the leaves during the month of August, and a new brood of larvæ appears in September, though they hatch mostly in the following spring or early in June, and become fully grown in July.

The larva seen from above is much like that of *Lozotænia rosaceana*, but the head is a little larger in proportion to the rest of the body, being as wide as the body in its thickest part. The body is more hairy, while the prothorax is not dark. The chrysalis is rather slender, the body being contracted at the base of the abdomen, on the rings of which there are dorsal rows of fine spines.

Mr. Fish writes me that "these larvæ, called the cranberry-vine worms, hatch about the first of June from eggs that have remained upon the leaves of the plant all winter. They commence to feed upon the tender growing shoots of the plant, drawing the leaves together with their net for shelter, concealing themselves and feeding within. Before reaching their full size they, if very numerous, almost wholly destroy the leaves and tender shoots, giving the whole bog a dark, dry appearance, as though a fire had been over it. This is why they are in some places known as 'fire worms.' Having reached their full size, they spin up among the leaves, or among the dead leaves upon the ground. After remaining in the pupa state about ten or thirteen days, the moths come out and deposit their eggs upon the leaves. This year the moths were out the last of June and first of July. In five or six days the eggs hatched, and this second brood, which is usually the most destructive, mostly changed to pupæ on the 20th of July. On the 26th of July the first moth came out, and most were out before the 4th of August. I saw the moth at Sandwich as late as the 20th of August. Most of the eggs laid in August do not hatch until the following spring. I did succeed in finding two or three larvæ in September, but they were rare at that time. The only sure means known of destroying them is to let water upon the bog for twenty-four hours."

Besides the moths and their caterpillars mentioned above, there are two other insects which derive their nourishment from the

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leaves. Mr. Fish has noticed plant lice (*Aphis*) on the cranberry vines.

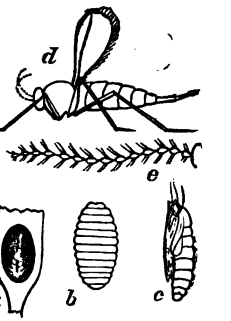

FIG. 19. CRANBERRY GALL-FLY.

A species of *Cecidomyia*, or closely allied genus belonging to the family of dipterous gall-flies, has been discovered by Mr. Fish attacking the leaves. The following figures, reduced from sketches made by Mr. F. G. Sanborn, will serve to give some idea of the transformations of this insect. The larva (*b*) is pinkish, and of the form indicated in the cut. It spins a cocoon (*a*) on the leaves apparently, and changes within the cocoon to a chrysalis (*c*); *d* represents the female, much enlarged, her body ending in a long retractile point; *e* represents the female antennæ, much enlarged. It is not likely that this insect does much harm.

ATTACKING THE FLOWER-BUD.

THE CRANBERRY WEEVIL (*Anthonomus suturalis* Le Conte).—Mr. W. C. Fish has found this insect preying on cranberry-buds, and communicated to me an account of its habits. It was identified by Dr. J. L. Le Conte as *Anthonomus suturalis* Le C., and I extract the following description of it from my "Guide to the Study of Insects," p. 487: "It is a minute reddish-brown beetle, with the beak one half as long as the body, just beyond the middle of which the antennæ are inserted. The head is darker than the rest of the body, being brown-black. The thorax is a little darker than the elytra, and covered very sparsely with short whitish hairs; the scutellum is whitish, and the elytra are shining reddish-brown, with the striæ deeply punctured, the interstices being smooth. It is .13 of an inch long, including the beak. Mr. W. C. Fish detected this little weevil laying its eggs in the buds of the cranberry. It selects a bud not quite ready to open, and, clinging to it, works its snout deep into the center of the bud. An egg is then deposited in the hole made, when the beetle climbs to the stem and cuts it off near where it joins the bud, which drops to the ground and there decays, the egg

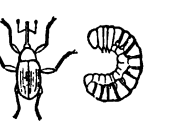
FIG. 20. Cranberry Bud-Weevil.

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hatching, and the grub going through its transformations within. The larva is long and rather slender, cylindrical, the body being of uniform thickness and curved; the head is pale honey-yellow; the jaws tipped with black; the segments of the body are very convex, especially the prothoracic one; it is white, with a few fine pale hairs, and is .08 of an inch in length."

Mr. Fish, in an article on this insect, published in the Yarmouth *Register*, states, in addition to what we have said above, that the "egg, which may be found within the bud, is pale honey-yellow, and is very minute, measuring but .02 of an inch. The egg hatching, a dull whitish grub will be found feeding within the bud. Having attained its growth, it changes to a pupa, and the perfect weevil eats its way out of the bud, leaving a round hole in the side. These beetles may be found upon the vines some time after the blossoms have disappeared. I have known them to eat into a cranberry, making a round hole large enough to admit the insect, but it is seldom that it does this. It also eats a little upon the under leaves, but I have never known it to deposit its eggs within the fruit, and I have never found the grub elsewhere than in the bud. I have taken this beetle upon the fruit of the blackberry, in company with other species of *Anthonomus*. This insect is not numerous anywhere, but is more common at Eastham than at any other locality that I have visited. As I have never seen one upon a bog that had been flowed during winter, I think that it will never become troublesome on such bogs at least. The larvæ are killed by a minute chalcis-fly, as I discovered the past season."

ATTACKING THE FRUIT.

The mature fruit is attacked late in the summer and in the autumn by the "fruit-worm." This is a small caterpillar belonging to the same family as the leaf-rollers. The first segment behind the head is rather large and square, and the body is less hairy than in the leaf-eating species. This worm is common in Massachusetts. It appears the first of August, and works through the month. The first signs of its presence are seen in the premature reddening of the berries. Most of the worms attain their

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full size before the first of September; some may be found in the winter. Mr. Fish states that when the caterpillar is fully grown, it enters the earth and spins a cocoon within a few inches of the surface. The cocoon is covered with grains of sand, and resembles a lump of earth. It remains in the ground all winter. An ichneumon preys upon the caterpillar. Unfortunately, we do not know the parent of the caterpillar.

These are the only insects thus far known to prey upon the cranberry, and occasionally one or several of them prove very destructive, locally.

In applying remedies, the most general and applicable is to flood the cranberry pastures or bogs. The vines should be kept under water for at least two or three days, as many insects will survive several days' immersion. Fires at night will attract the moths, and numbers may be destroyed in this way.

PYRETHRUM POWDER AS AN INSECTICIDE.

Many persons are opposed to the use of the mineral poisons for the destruction of insects, owing to their liability to injure the foliage of the plants and trees to which they may be applied, and also to the fact that there is more or less danger to life from improper or careless use. Many accidents to stock, and some to children and adults even, are reported to have occurred from mistakes in their use. Great efforts have been made to discover something that would be harmless to animals, man and plants, and yet fatal to insect life. A number of claims to discoveries of this kind have been made, but most of them have not given good satisfaction; on trial they have been found inefficient or too expensive for general use. But Pyrethrum Powder has been extensively tried for two years past, and bids fair to become a valuable aid for this purpose. It has been known for quite a number of years as Persian Powder or Dalmatian Powder, and has been used effectively in the destruction of household pests. This powder is entirely vegetable in its composition, being made from the flowers of the Pyrethrum, commonly known as Feverfew, and noted for its medicinal qualities, bitter taste and abundant bloom

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in our flower beds throughout the whole season. Owing to the high prices at which it has been sold, its use has hitherto been quite limited, and mainly within doors, but various experiments on a large scale have been made recently in the open field, which have proved very satisfactory. Prof. Riley, United States Entomological Commissioner, has been trying it in the destruction of the cotton worm at the south, and as it is a subject of much importance to the horticultural and agricultural interests of our state, the following extracts are taken from his report in regard to the cotton worm:

"The so-called Persian Powder is made from the flowers of *Pyrethrum carneum* and *P. Roseum*, while that from *P. cinerariæfolium*, a native of Dalmatia, Herzegovina and Montenegro, is more generally known as Dalmatian Powder. Some interesting experiments made during the year on different insects by Mr. William Saunders, of London, Ontario, show that the use of this powder may be satisfactorily extended beyond the household, while a series which I made in the summer of 1878 with the same powder on the cotton worm showed it to have striking destructive powers, the slightest puff of the powder causing certain death, and the almost instant dropping of the worm from the plant. Repeated on a still more extensive scale the present year, the powder proved equally satisfactory in the field.

"Here we have a remedy far exceeding any other so far as known in efficacy and harmlessness to man and plant, and the only question in my mind has been to reduce its cost. There was some hope of doing this by ascertaining the destructive principle, and it is to Prof. E. W. Hilgard, of the University of California, that we owe the first accurate determination of the same. The following extracts from a letter received from him indicate the results of some of his experiments:

"'I have had Milco's product in hand for some time, and have tried it on various bugs, both in powder and infusion. To understand the best manner of using it in each case, it must be kept in mind. 1. That the active substance is a volatile oil. 2. That said oil, under the influence of air, not only volatilizes, but is also oxidized, and thereby converted into an inert resin.

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"'It follows, from 1, that the pyrethrum is at a disadvantage when used in the shape of powder in the open air, especially when the wind blows; from 2, that it is of the greatest importance that the substance should be fresh, or should have been kept tightly packed, for the same reason that hops must be similarly treated. Hence I find that Milco's fresh powder is of greater efficacy than the best imported, although some of the latter contains twice as much matter soluble in ether; but the extract from the "buhach" is a clear, greenish oil, while that from the imported powder, and especially that from "Lyons magnetic," is dark and thickish, or almost dry and crumbly.

"'Like all volatile oils, the essence of pyrethrum is soluble in water to some extent, and the tea from the flowers, and to a less extent, that from the flower stems and leaves, is a valuable and convenient insecticide for use in the open air, provided that it is used at times when it will not evaporate too rapidly, and that it is applied in the shape of spray, when globules will reach the insect despite of its water shedding surfaces, hairs, etc. Thus applied, I find that it will even penetrate the armor of the red-scale bug — or rather, perhaps, get under it — so that the bug falls off dead, in a day or two. The hairy aphides are the most troublesome, and require a strong tea of the flowers, atomized. The diluted alcoholic solution can, of course, be made as strong as you please, and will kill anything entomological. Some persons have tried the decoction, and have, of course, failed, as the oil is dissipated by boiling.'

"My own experiments and those of Prof. Hilgard were made with the powder from plants grown in California by Mr. G. N. Milco, of Stockton, and this powder, when used fresh, I have found to be more powerful than the imported kinds. Mr. Milco, a native of Dalmatia, has been cultivating the *P. cinerariæfolium* in California in constantly increasing area for the past three years, and deserves great credit for his efforts in introducing it. The California product is put on the market in neat bottles and packages, under the name of 'Buhach.' Before considering the cost of this insecticide, it will do well to summarize the result of the experiments.

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"Pure Pyrethrum Powder, mixed with a small quantity of finely powdered resin, was applied to the underside of the leaves by means of a small pair of bellows. Taking advantage of the direction of the wind, and using the bellows freely, all the upper leaves of the plant were found to be well powdered, and consequently nearly all the worms upon these leaves received at least some particles. The smaller worms died in convulsions in from ten to twenty minutes, according to their size and to the quantity of powder they received. Large worms soon became uneasy, and finally fell to the ground, when they invariably died in from five to twenty-four hours. Every attempt to restock with worms a freshly powdered plant failed. They evidently do not like the smell of the powder, and throw themselves from the leaves until they either fall to the ground or reach a leaf which has not been powdered.

"Diluted with flour in varying proportions from one part of each up to one of Pyrethrum and ten of flour, it produced equally good results as when pure. Mixed with sixteen parts of flour, it proved at first insufficient, but upon being kept in a tight glass-jar for two weeks, it evidently gained in power, for it then proved almost as effectual as the stronger mixtures. The powder can be successfully sifted on the plants during cloudy days, or during the evening when the worms are on the upper side of the leaves. On sunny days, or when the worms are just hatched, it is more necessary to apply it to the underside of the leaves, as it acts only when coming in actual contact with the worms. A strong decoction of the powder applied to the leaves produced no effect; nor did the worms appear to suffer from eating leaves thoroughly soaked with the decoction.

"An alcoholic extract of the powder diluted with water at the rate of one part of the extract to fifteen of water, and sprayed on the leaves, kills the worms that came in contact with the solution, in a few minutes. The mixture in the proportion of one part of the extract to twenty parts of water was equally efficacious, and even at the rate of one to forty it killed two-thirds of the worms upon which it was sprayed in fifteen to twenty minutes, and the remainder were subsequently disabled. In still weaker solution

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or at the rate of one to fifty, it loses in efficacy, but still kills some of the worms and disables others. I can confidently recommend, therefore, the alcoholic extract, diluted at the rate of one part of the extract to forty of water, and sprayed upon the plants, as an effectual remedy.

"The powder is now selling in California, at wholesale, in eight pound packages, at $1.25 per pound; but from the facts kindly communicated to me by Mr. Milco, it appears that he has raised as much as 647 pounds to the acre, and that the cost of production, milling, etc., on a large scale, need not exceed six or seven cents per pound, because in the experiments attending the introduction of the plant, many obstacles and expenses had to be met. The plant is wonderfully free from insect enemies, and blooms all through the summer. * * * The question as to whether the Pyrethrum can be used as a substitute for Paris Green, London Purple, and other arsenical powders, resolves itself into one of relative market price, and if Mr. Milco's estimates are warranted — and no one in the country is better able to state the facts or give the figures on this subject — the Pyrethrum may be produced as cheaply even as London Purple. It is a question which future experience alone can determine, but that the prospects are encouraging, there can be no question, and it is highly probable that the planter in the future will make it a rule to grow a patch or a few rows of this most useful plant, as a ready means whereby to protect his crop."

THE PHYLLOXERA IN CALIFORNIA.

Mr I. De Turk, a practical vine grower near Santa Rosa, California, has given the appearance and habits of the phylloxera considerable attention. At an interesting lecture delivered by Prof. Hilgard in the Palace Hotel, in San Francisco, several years ago, he conceived the idea, from the professor's illustrations of the insect, which were greatly magnified, that there was a striking resemblance between it and the seventeen-year locust, both in the larva and in the wing state. The professor at the time stated as a fact that the insect had never been seen in California in the wing

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state, and that is true up to date. Repeated attempts have been made to find it in this condition, all of which have so far signally failed, though it has been detected and fully described by French entomologists. Mr. De Turk thinks that the phylloxera of California follows in its reproduction and migration the usual law of insect life of its class — that it comes at certain periods to the surface, appearing as a winged insect, in which condition it is fertilized and extends its work of destruction. This period, whenever it occurs, will be the time to annihilate it.

From the extraordinary numbers in which the parasite is found clustering about the roots of diseased vines, and its rare occurrence, as far as is known, in the wing state, it is probable that it has the power of reproducing itself for some time without coming to the surface, but if it follows the usual law of insect life, there will come a time when its capacity for reproduction will be exhausted, and it must come to the wing state to renew its powers of fertilization. At that time it probably deposits the egg which produces the breeders in the wood or foliage of the vine. When hatched the larva falls to the ground, burrows to the root with new powers of propagation, reappearing in the wing state in due course, to again fertilize, extend its ravages and disappear. If this theory of the habit of the insect be true — and it would be a violent assumption to claim that it can reproduce itself otherwise than after the natural habit of its class — then we can readily see that it can best be exterminated at this critical period of its existence.

If the time when this insect takes the wing form can be determined, Mr. De Turk thinks it could be destroyed by the application of an insecticide powder, or perhaps by growing the plant from which these powders are made among the vines. The remarkable properties of insecticide plants were brought into notice about thirty years ago, and have since come into general use in the preparations known as Persian and Dalmatian insect powder. It is perhaps not generally known that one variety of the plant referred to is already extensively grown in the San Joaquin valley under the name of buhach. The powder prepared from the California plant is sold under the name of Dalmatian Powder, de-

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riving this name from the province of Dalmatia, Austria, of which it is a native. An instance of the deadly quality of the California plant to insect life was recently published, in which it was stated that a lot of wheat, literally alive with weevil, was stored in a warehouse in Stockton. There happened to be also in the same warehouse a lot of this plant, so destructive to insect life, on storage. When the wheat was removed after some time, not a weevil was found in it alive, but thousands were found hanging dead on the outside of the sacks.

The *Canadian Entomologist* relates an interesting experiment with insect powder on the green aphis so troublesome on roses and other ornamental plants. It says that "by applying the powder in the evening to the plants, they may in the worst cases, be freed from aphides by a single application. For the purpose of testing this, having found a plant literally swarming with the green aphis, so that the sight of it was almost disgusting, we submitted it to the action of the powder one afternoon, having previously spread a large piece of white paper under the plant, so that the effect of the powder might be seen. Almost immediately they began to fall on the paper, and in less than ten minutes a hundred or more were on their backs; in the course of half an hour over five hundred had fallen on the paper, and the following morning all had disappeared. We have had the powder used in greenhouses by some of our friends with like success." The buhach, so successfully cultivated in the San Joaquin valley must belong to the family of plants known as Pyrethrums, from which the Persian and Dalmatian powders are made, as all insecticide preparations known owe their activity to one or the other variety of this class of plants.

THE FLOWER GARDEN—SOWING AND TRANSPLANTING.

The following communication gives the practical experience of one of our most enthusiastic and most successful cultivators of flowers, Mrs. D. Huntley, of Appleton, and will be read with much interest, both for the valuable information it contains, and the source from which it comes:

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SOWING FLOWER SEEDS.—The time for sowing flower seeds depends much upon the season and the locality. In Northern Wisconsin, it is not wise for beginners in flower culture to sow seeds before the first of May, from that time till the middle, although the present early spring indicates that it may be safe to plant earlier. If seeds are sown very early they require great care in the hot-bed or seed-bed, and plants are very likely to become large and sickly before favorable weather for transplanting. Flowers will be more satisfactory even when a little late, if they are just ready to transplant when the growing time begins.

Those who are skillful in flower culture, if they have much time to devote to it, will find a hot-bed the best place to sow flower seeds, especially if they wish many varieties. The catalogues give explicit directions about making hot-beds, sowing the seeds, watering and airing, but the greater part must be learned by experience; a little neglect when care is most needed, will cause fatal results, and the amateur in flower culture may find a hot-bed the most ruinous place for seeds or plants. We have had excellent success with seeds in the hot-bed; sometimes nearly every variety of the first planting would come up quickly and grow well.

We have also been very successful with seeds sown in the following manner, and have found it very much less care than the bed or the border in the open garden, especially when only a few kinds are grown: Take a box three feet long, one foot wide and eight inches deep; fill to within two or three inches of the top with good sandy garden soil, finely pulverized, sow the seeds in rows crosswise the box, cover lightly with soil, from a quarter to one inch in depth according to size of seed, write the name of each variety on the edge of the box with a lead pencil — wind nor rain will not destroy this kind of label — sprinkle with tepid water, and set the box in any warm, convenient place either indoors or out, until the seeds begin to come up, then place it in the sunshine in some sheltered spot by the door or piazza where you will see it often; keep constantly moist with tepid water, and occasionally loosen the earth between the rows; if the nights are cool cover the box with a board or an old garment, and remove

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it to the kitchen if there should come a long cold rain. In this way you can easily take care of many varieties until ready for transplanting.

Some flower seeds germinate very quickly; the Zinnia generally makes its appearance about the fourth day after planting. Asters usually come up well; Phlox are often tardy; Pansies require a long time to germinate, often two weeks, but are almost certain to come at last. Verbenas will try one's patience if any seeds will; if one-half the seed sown comes up, they may be called a success; sometimes a tiny plant will be found just coming when others are ready to transplant, and sometimes you may not get more than one or two plants from a whole packet, but Verbenas are so lovely, even one good plant is worth more than the dime which was paid for seed.

Maurandya and Smilax require a little special care. We have had fine success with them, when planted in a pot or vase, set in the window, with but little sunlight. Maurandya seed should be sown on the surface of fine soil, brushed over lightly and watered with care. Plant Smilax half an inch deep, keep it quite moist; it may be four weeks coming up.

Sweet peas should be treated much like garden peas, planted two or three inches deep, as early as the garden is ready, and in the place they are wished to bloom. About the best instruction that can be given concerning flowers, is that which will induce people to grow them. A small amount of money invested in seeds, will sometimes greatly increase the interest in flowers, and if one really loves these summer beauties, they will learn more by experience than in any other way.

TRANSPLANTING. — Transplanted flowers are more easily grown, and much more satisfactory, than those sown in the garden where you wish them to bloom. While the seeds and young plants are in the hot bed, the flower bed may be prepared in odd moments by those not at all skillful in flower culture. After the ground has been spaded, young children, with little rake and hoe, will do very successful work in pulverizing the soil, and by frequent raking will destroy the weeds, so that after plants are set it is very little work to keep them clean, much less than the old way of weed-

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ing. Children can do this work also, when they could never be trusted to weed the flower beds. When plants are from one to three inches high, according to their habits, they are ready for transplanting. The most favorable time to do this is in the evening or morning after a rain, when the soil is moist enough to handle nicely, but not in the least muddy; then, if the plants are not too thick in the seed bed, they may be transplanted without causing much change in their appearance. But if the weather is not favorable, and if proper time cannot be found, and the plants are getting too large, this work may be done at any time by watering the place where you wish to set them, and then continue to water morning and evening until there comes a rain. This causes a great deal of work, but one dry season we were obliged to do so, and found it much easier than to do without flowers.

A shallow box or pan is most convenient for carrying plants, a garden trowel or broad strong knife for taking them up; put each plant in a place previously made for it, press the earth closely around it, water if inclined to wilt, and if a sunny day, shade with paper or a long board on the south side, supported by stakes, is an easy method and sure protection.

Now a word about the place to set flowers. Many farmers' wives find it very difficult to get any help about flowers from the men folks; in many cases there is very good reason for this. On nearly every farm there is work enough for half a dozen pair of hands, and often there is but one hired man or boy, sometimes none at all, and where this is the case, it cannot be expected that the farmer can do much in flower culture until the imperative work of the season is finished. The farmer's wife who loves flowers so well that she cannot be happy without them, can never wait till all the farm work is done, it would then be too late. So, my reader, if this is the condition of things about your home, if you cannot have a flower garden with fanciful beds, and mounds, and pretty side walks, never grieve over it one moment; the beautiful green grass before your door is one of the finest ornaments a farm house can have; besides this, perhaps you can have a narrow bed two feet wide, close to the house and all around it, in which to set your flowers, they will be very near you, where you

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can care for them easily; until you have seen it you cannot think how lovely your home will look framed with blossoms and surrounded with green lawn. But if you cannot have this, a box of earth outside the window, supported by posts or brackets, will give you quite a window garden, and you can care for that and enjoy it too, when domestic duties keep you indoors all the day. If this is more than you can do, devise some way by which you can have a vine by the door, and if the soil is poor and hard, spade it deep, manure it well, add some garden soil, and in it set the dear old "morning glories." They will cover your doorway with beauty, and delight the children more than the grandest greenhouse vine could; then take all the rest of your flowers to the vegetable garden. Ask for a place to set verbenas and petunias near the melons and cucumbers, where the plow will not disturb them. Pansies and phlox should be set in a mass, but asters and balsams will look well in a row along the garden path, and when gathered for your rooms, will be as beautiful as though grown in a florist's garden.

PRACTICAL EXPERIENCE IN ORCHARDING.

BENJ. R. BONES, RACINE.

It is with diffidence that I present my views on apple culture in our state, as I realize that the methods recommended may not be in accordance with the judgment and experience of men longer in the profession, but if I may suggest anything that will be of advantage to those engaged in fruit culture, my object will be accomplished. Judging from my own experience, I am satisfied that orcharding in Wisconsin can be made to pay, even when raised for commercial purposes. Notwithstanding the serious mistakes made during the past five years, by which I have lost many fine old trees, still I have packed and marketed in these years over 1,900 barrels of choice apples, and that from an orchard of nine acres. It is not to boast of results that I make this statement, but to prove that apple culture can be made a success with us.

In my opinion, it is better to have both the stocks into which

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our grafts are set, and the cions themselves, grown in our own climate. The best advice that can be given to those who are setting out an orchard, is to select the kinds that are doing the best in that vicinity, setting two year old trees. The holes should be dug in the fall, so that the frosts of winter may act on the subsoil in the bottom; these holes should be large, say four feet square and two feet deep, throwing the surface soil to one side, to be mixed with about an equal part of compost to fill the hole with, before setting the tree in the spring. This may look like a good deal of trouble, but I assure you it will pay. There is no danger of the growth being too much forced by this process, as it is mainly made in June and July, and will become so well ripened by the time snow flies as to stand the winter. Allow the trees to head where they want to, which will be very low. Do not allow them to fork; this is easily prevented by twisting one of the branches of the fork around the other, bringing it over like a hoop, and cutting the twisted one off the following spring. This practiced upon the forks for three years, will give you a pyramidal shaped tree with the main stem or leader running up through the centre not unlike an evergreen, which is a better shape for the sun and dew to act upon, and one that will never split down.

A bud grows into a branch; if you don't want the branch, rub the bud off, is the advice I would give for pruning, although careless in following this advice myself. Don't prune much, and I am not sure but that with a few years more experience I shall say don't prune at all, or only as a certain poet advises:

"The tainted branches which if lopped with care a strength may give,
By which the rest may bloom and live."

Those tainted branches I do not now cut off close to the main stem, but leave several inches of stub. You may have noticed decayed wood in the trunk where a large branch had been removed, it soon reaches adjacent sap ducts, cutting them off, or poisoning the sap which feeds the branches directly above the wound, and in a couple of years kills them. From the time the trees are planted until they bear paying crops, I would advise hoed crops among the trees; clean cultivation, but never omit to mulch the trees well in the fall. After the trees commence bearing paying

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crops, do not raise any other crop to take off the ground. Experience teaches me that about twice plowing and a number of times harrowing previous to August 1st, and then sowing millet to let stand for a mulch in winter and to hold the leaves where they fall, is about the best cultivation. The plowing should be done carefully. I prefer to do the plowing myself in the orchard; it is one of those places on the farm where your servant becomes your enemy, and a careless plowman, by clipping roots, may shorten your crop and injure the growth of your trees. I have found good coats of compost very beneficial, fastening more of the young apples, making larger apples and causing them, by rapid growth, to throw off the mildew or scab.

The strip of country lying along the Lake Michigan shore, from Sheboygan south, is doubtless the best part of the state for apple culture. I most assuredly believe in timber belt protection, both from winters' cold and to break the force of the high winds in the fall, which otherwise would blow off much fruit, and I also regard it as essential to success that the soil be a strong soil, heavy clay, rather than sandy, but well underdrained, and on an elevated location.

Wisconsin apples, if properly and honestly packed and cared for, will keep longer than those grown either in New York or Michigan. Owing to our hot, dry seasons, we are compelled to gather them sooner than they do elsewhere, and hence they are in the market earlier. The fact that we have so many difficulties to contend with in raising fruit, is a great incentive for us to strive to make it a success, for there is no doubt but that the few men who have "orchard on the brain," by their persistent efforts, are bound to succeed, and then they will have the corner on the market. Of this number I am anxious to be one.

GARDEN FLORICULTURE.

BY DR. H. ALLEN.

Lord Bacon has said that "Every man's proper mansion, his house and home — being the theater of his hospitality, the comfortablest part of his own life, the seat of his self-fruition, the noblest of his son's inheritance, a kind of private princedom, nay,

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to the possessor thereof, an epitome of the whole world — may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned." Indeed, our homes are, and should be, more than they are, the efficient instrumentalities that determine our destinies. They are not only the comfortablest and noblest part of individual life, but they are the fountains of natural life; not private princedoms only, but the nurseries of the princes of the people; not the epitomes alone, but the birth-place and power of the whole world. They determine, more than anything else, the brawn and the brain of every man, the physique and complexion and intelligence of every woman. To them we may turn more than to anything else for the why of our mental weakness or strength; our physical improvement or deterioration; our moral uprightness or obliquity; the refinement of our tastes, and the pure atmosphere of our social virtues, or the rankness of society's turpitude, and the utter absence of that faculty which detects and delights in beauty and order and congruity in all things. "The seat of our self-fruition!" No joys so pure, so sweet, so nourishing, so indestructible, so elevating, and courage and faith-inspiring, as the joys that have their birth where we were born, and cluster around a man's "proper mansion, his house and home." How fitting, then, that that home should gather into it, and around it, every worthy attraction and adornment which the possessor can readily secure. It should be made a place of taste and refinement; a place towards which the children and every member of the family would be attracted more and oftener than every other; not a place to go to three times a day to eat and to sleep, as the animal to his trough and nest, but a place to be absent from which would be weariness, to return to which, joy.

Among the external means for creating such an attractiveness to our homes, we think none so universally available, and which will yield more abundant rewards, than a well planned and thoroughly and neatly cultivated flower garden. It is surprising what stores of domestic, social and moral wealth such a plat of ground will yield; what rewards of refined pleasure, of elevation of morals; what cultivation of higher instincts and purer tastes;

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what stimulants to thought, to domestic love, to disrelish of the fallacies and intoxications of an impetuous and feverish society; what elements and fields of rest to the weary, of consolation to the desponding, of wealth to the poor. Such the garden may and should be made, nature's enchanted arbor for ambitious and sensitive youth, decoying them from the saloon and the tobacconist; from the restaurant, the corner store and store corner; from the card table and dice box; from the Sabbath stroll, and the thousand meshes of the common tempter's snare. "It would be an anomaly," says a modern writer, "to find a student of nature addicted to the vices that cast so many dark shadows on our social life; nor do I believe that it would be possible to find in the annals of criminal history one instance of a naturalist who became a criminal or of a single gardener who has been hanged."

A little reflection will show to us that the beauties of the natural world cannot be designed otherwise than to elevate and gratify in the purest and loftiest sense of those terms. No flower was ever "born to blush unseen, and waste its fragrance on the desert air." There is an eye, more penetrating than human, that searches out those lonely beauties and takes infinite delight in the diffusive fragrance of that desert blossom. And a little experience will prove to you that no plat of ground of equal size, and no expenditure of equal time and money, will yield such a harvest of joy to yourself and family as a well planned, well planted and well tilled flower garden. Several times a day, and almost every day of the week and month for five or six beautiful months of the year, you will visit the spot, as we and ours have done times without number, and with hearts full to the overflowing will exclaim, in concert it may be, Oh, how beautiful! beautiful! No vegetable garden of its size can yield a tithe of its chaste and tender pleasure. No tiny orchard can gratify your sensibilities through so many days and months of incessant and healthful joy. No pictures that hang on your walls, or carved and polished furniture that decorates your parlors, or skill of architecture that renders tasteful your dwelling, can for a moment compare with that changeful delicacy of shades and colors and endless variety of form and development which the Divine painter

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and architect bestows so lavishly on the simple mechanism of his own hands and the redundant display of his infinite taste. Rear your children by the side of the opening bud and fragrant blossom, and before they reach their first sextile year they will name your choicest flowers and those of their brothers and sisters. They will watch their bursting from the ground with childish delight, will note their growth and history in their young memories, and they will pluck their blossoms for the table vases and their seed cup for future planting with a greater satisfaction and purer joy and grander love of home than all the holiday presents and advertised gift enterprises and toothsome titbits, the combined toy shops, pleasure vendors and sugar refineries of the world could furnish. Seeds of a nobler ambition will be sown in their minds — nuclei around which a stronger domestic love will cluster — thoughts which will point and stimulate to a higher mental cultivation, and thus you have pre-occupied the spirit ground. Weeds cannot as well hereafter grow. False and intoxicating pleasures are rendered distasteful, and no small part of the work is done to start that young mind on the successful road to lasting virtue and happiness. This is the office and the design of the beautiful. This is God's holy and wise purpose when he gave you the fertile soil, the beautiful and fragrant flowers, and the intelligent mind to cultivate and admire them.

Having premised this much with regard to the claims and usefulness of the flower garden, we will make some suggestions in reference to its preparation and cultivation. The place selected should be easy of access from the house, and, if possible, in full view from the kitchen and sitting room window, that the household duties may be cheered by an occasional glance at the daily unfolding beauties, and gratification enjoyed at the observance of the skill of your own handiwork in laying out and decorating the plot before you. It should be a sunny spot. Flowers revel in sunshine. They abhor shade (with a few exceptions) and die in its chilling embrace. Trees and shrubs may form a wind break on the north and northwest side, if you please. The soil is best, a sandy loam. Even a large preponderance of sand is not harmful. It will deepen your foliage and increase your blossoms.

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Make it rich, real rich. Don't cheat the flowers. It will but cheat yourself. They will flourish in a sunny spot, largely sandy, with plenty of well rotted manure. Plow or spade it thoroughly and of medium depth; harrow it finely and clean it of sticks and stones perfectly. Now you are ready for the plot. Measure off forty feet square. Not less than forty. Don't be wary of your inches of land. There is plenty of it and you are starting out for no mean enterprise. This is not a mere appendage to a vegetable garden or potato patch; not a useless place left to please the girls and their mother. No, indeed. It is to be the most important and valuable spot on the premises outside the house. It is to be the crown of the garden — the Queen's delight. The sceptre the boys will be glad to serve under. The place to which you will first and last escort your visitors; aye the very spot the king will delight to honor. Let it be generous then, forty feet square at least. Now lay out your plot thus: Lay off a border of two and a half feet all around it for border plants, with a good wide path of at least two feet between it and the main plot, where the little olive plants may run and sport and chase each other inside the floral borders. Next make a circular bed in the centre, eight feet across, with another generous path around it. Now run paths from the centre bed to the border path at the centre of each side of the square, and you have left four corner beds, which you can divide by inserting in them an oval bed and some smaller squares, or circulars and squares, or diamonds, having each corner a little different from the others, or the two diagonal ones similar, as your choice or your taste shall dictate. Such a plot, or one which this may suggest, or a better which your own reflection and taste may direct, being completed, you come now to the planting.

Let me say right here that a tasteful plot for a flower garden cannot well be over estimated. How frequently we see the good effect of an excellent selection of plants entirely destroyed by the promiscuous, untasteful, helter skelter way in which they are planted, no method, no adaptation, no fitness is studied. Should I purchase attire for my little daughter, and put the gloves on her feet, the shoes upon her hands, the neck tie around her ankles, the bonnet on her knees, and the apron on her head, the articles

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I purchased might be of never so rich a material and tasteful in form, and I might fasten them as neatly as I could, and still she would look like a fright. So it is with many flower gardens. A rose here and a dahlia there, and a tulip out in the corner; a verbena in a box, some petunias on a stone heap, a few "sun roses" at the corner of the house away yonder; some hollyhocks in the currant bushes, and poppies in the weeds, and perchance a solitary geranium or a struggling fuchsia in an old broken pitcher bottom or a lone flower pot which the scanty pennies of the flower-loving girls had charitably purchased. Or even if the plants are bought directly from the green house, in good order and taste and variety, with the full approbation of the florist, and at no lack of expense, yet placed in a piece of ground without a studied and tasteful order of arrangement, and appropriate relative space to occupy, three-fourths of the good effect is lost. "Order is heaven's first law," and adaptation or "fitness of things," the second. Be sure, then, to make a handsome plot of your ground before you put a seed or a plant into it. Your flowers are your children, children of beauty, the offspring of your æsthetical nature. The garden is their home. Study ground architecture, then, and make the childrens' abode worthy of them and their parent, before you introduce them to it. Now stand aside and view it. If it needs a little altering or reshaping, do it, and continue the plastic work until you can look upon it and be satisfied, and in the fullness of your approbation you can say, as Napoleon at the battle of Austerlitz said to his invincibles, "That is it!" "Now is the time!"

We are ready then for planting. The centre bed we will fill entirely with verbenas, or if you choose a variegated canna may be put in the centre, and around this a circle of dark colored verbenas; next a circle of pure white, alternated with pink. The outer circle will be composed of a tastefully arranged variety of colors, all comprising from 20 to 24 plants. This bed will furnish you with an abundance of rich flowers every day, for four or five months, reaching even beyond the early frosts. You will next have a bed of Geraniums and Lantanas with a double white Fever Few in the centre. A bed of Pelargoniums, silver-leaved and "horse shoe," with double scarlet and pink and a Lady

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Washington. The first bed you will have supplied from the green-house each spring, or from the conservatory, or plant window of your own dwelling. But the Geranium bed and Pelargoniums after the first year will supply themselves by taking up the plants before frost, trimming off the recent shoots and foliage, and hanging them in the cellar until wanted for spring planting. This is simple and easy, and every one should have an abundance of them. You want an entire bed of Double Portulacca. This is best grown in a mass; another of Phlox Drummondi, a third of Petunias, dark shades, a fourth of Mirabilis (or 4 o'clock). These will usually all self seed, so that the second spring you will have plenty without sowing. Sweet Peas and Zinnias and Euphorbia and Datura, you will plant in the border. The Eschscholtzia is a brilliant orange flower with very delicate foliage, and will reward any one for its cultivation. It is hardy and will propagate itself. You will, of course, have a place for the Pansies, those intelligent, half-speaking faces, which always look at you so wishfully. Everybody also has Asters and Balsams, and Dahlias and Tulips; but the Gladiolus and Tuberose are not so common, yet are easily raised, and a bed of them will please you well.

There are a few of the less showy flowers which I wish to mention. The Abronia is a charming creeper, with verbena-like, sweet scented flowers, blooming through the season. The Nemophila Insignis is a low, bell-shaped, delicate blue flower, with a white centre. A small bed of this, sown very thickly, on light sandy soil, and in a shaded spot, in full bloom, is a perfect beauty. You have only to see it once, to be charmed with it. It, too, blossoms all the season. The Mignonette and sweet Alyssum you will find a place for in the corners of the angular-shaped beds, which will come of your plot as suggested. So of Candytuft, and Larkspur and Dianthas, and Salvia and Ten-week's Stock. But you want as mall bed of Salpiglossis; this beautiful funnel-shaped flower, curiously veined and marked, and satin-tinted, makes a fine display. You must also have a mound three feet across covered with Clianthus. That "Glory Pea," as it is termed, and glorious it is. At times it resembles a gorgeous humming bird, with its jet black crest and

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scarlet wings, just in the act of flying. Everybody will admire it. And, lastly, you may build on the north side of your plot a rustic arbor, with a tight back and open front, and seats within, facing towards your garden; and cover it with the running cypress and morning glory, and Convolvulus minor and fragrant Madeira vine. And here you may sit of a summer afternoon, with your book or your needle in hand, under your own vine, inhaling the fragrance of your own flowers, and growing healthier and happier and better every moment, because breathing God's pure atmosphere, admiring His handiwork in nature, and lifting your heart in gratitude for such sweet and gorgeous demonstrations of His parental love. And all this need not cost you five dollars (or, perhaps, two besides your own labor), which will yield its own reward in the healthful glow it will impart to your cheek, and cheerful transformation it will give to your spirits. And no five dollars spent in any other possible way, I venture to affirm, will yield you half the happiness of this, when you have come to be fully acquainted with its cultivation, and to appreciate its unnumbered beauties. This plot may remain for years in the same form, spading and fertilizing it as needed, or it can be remodeled at pleasure.

There are many other kinds of flowers worthy of cultivation, and some equally desirable for a flower garden, with those mentioned. I once had a white Canterbury-bell, on which I counted over fifty full blossoms at one time. It was of pyramid shape, and two feet high, and hung all around with those peculiar snow-white bells. It was a marvel of beauty. People would stop their carriages in the street to gaze at it. But a paper like this cannot be supposed to be exhaustive; it must be mainly suggestive. A little experience, and your own taste will be your guide in your future selection.

The time and method of planting is of importance. The very hardy seeds, and those whose plants will not well bear transplanting, such as Escholzia, Larkspur, Poppies, Sweet Pea, Candytuft, etc., are best sown in the open ground where they are to remain. But to secure an even and regular stand, most varieties need to be transplanted. Sow in boxes, in a mild, partly exhausted

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hot bed, about the first of April. Cover the bed with oiled sheeting, which keeps it more moist, and renders it less liable to bake than the glass; or you can sow seeds in boxes in the house, if you do not care to make the hot bed. Still, every farmer or day laborer can make a small hot bed, at almost no expense.

Plant out when the ground is thoroughly warm in May. In transplanting, do not skim the surface, but let the trowel down deeply, so as to embrace the fine rootlets that shoot out from the perpendicular shaft-root that supports the plant. It is from a want of regard to this point that certain plants have gained the reputation of being hard to transplant, such as the Escholzia, and Poppy, and Candytuft, etc., all of which I have frequently transplanted with perfect success. They have long tap roots, at the bottom of which project small fibrous roots, that take up nourishment for the plant. Put your trowel below these, and embrace them, and your transplanting is as successful as with any other, all the difference being that their fibrous roots commence to radiate lower down than most other plants.

Your sowing and planting is done, and you wait for the frequent rains and the genial warmth, to quicken and give form and beauty to the embryo life before you. Meantime the weed seeds are ready to anticipate your hopes, and to preoccupy the ground you had designed for better purposes. Watch them, and suffer them not to get beyond the tiny shoots. Keep the rake and the hoe on the perpetual go. Pay especial attention to the paths, They are a very important part of a flower garden. They should be wide and generous, and always kept perfectly free from weeds, and their borders and edges distinct and regular. In early spring this will require careful attention and frequent diligence, but soon the weeds will give up the contest, and you have the victory. As the plants mature, trim them often. Flowers, like aquatic fowls, grow handsome by frequent plucking. Verbenas must be plucked, or they will deteriorate, and ruin themselves by their seed producing tendencies. The rose geranium delights in frequent clipping. A few of these, planted out, will furnish you with all the fragrant leaves you desire through the season, and,

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besides, astonish you and your neighbors with the magnitude of their growth. And these are but samples of many others. Then trim largely, pluck frequently, cultivate highly, weed closely, plant and sow unsparingly, plot tastefully and prepare the soil richly, and do all with a hearty good will, and you will have a flower garden which will be "the theatre of your hospitality," "the comfortablest part of your life," "the seat of your self-fruition,"—a kind of private paradise, whose rewards and beneficent influence shall not cease, upon yourself and family friends, in elevating, instructive and health imparting blessings, while time shall last, and God shall give you and your children instincts and tastes to enjoy them.

The history of garden floriculture shows a vast increase of attention to the subject within the last few years. The amount of surface planted and the number and variety of flowers embraced, has doubled several times in ten years. This is clearly shown in the great financial success of the professional florists, and their rapid numerical increase. The people are beginning to appreciate the actual value of the beautiful in the pencilings and paintings and delicate architecture of things that grow. Where a few years ago there was next to nothing, now hundreds of door yards and garden plots are filled with fragrant blossoms. Then everybody was ignorant of their existence and much more of their value. Now scarcely a township which cannot boast of some disciple of Vick, or Briggs, or Washburn, who has started a hot bed and flower garden as a nucleus for future good to the people. To some who hear this paper, the names and culture of flowers herein mentioned are as familiar as household words; and every thought expressed meets with a ready and full response. There may be others, however, whose experience has been so limited in this direction, that this description seems more like an ideal picture than anything practical; or, if practical, attainable only by the man of leisure, who can spend days and weeks in its preparation; or the man of wealth, who can purchase what he chooses. This, however, is a mistaken view. It is an inference from ignorance. Nothing is so practical as a good flower garden, and nothing more profitable; if happiness is your aim, and we all live for

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happiness, you have only to try it to know it. No luxury on God's fair foot-stool so cheap. Everybody can have it. It is the poor man's friend; the busy man's solace; the plowman's rest; the student's recreation; the matron's restaurant; the maiden's arbor of thought; the children's play-ground; the grandsire's field for meditation, from which he may gather emblems of that better land, and cast them into the lap of his aged partner, while she sits and sings in her heart and drops tears of joy as she thinks of the Rose of Sharon, and the Lily of the Valleys, and the never-fading blossoms of the celestial plains towards which she hastens.

Prepare your ground; make your plot with taste; send a dollar to Vick or some other florist for his collection of seeds; plant cautiously and hopefully; make the best display of what you have; visit your neighbor and learn all you can of him or her; communicate in return; change and interchange thoughts and plants and seeds, and soon you will find a seed germinating in your own mind, whose development will make practical every thought I have expressed, and introduce you to an experience you never have dreamed of: to an atmosphere of gladness and a field of usefulness and gratitude whose harvest will be full, and rich, and perennial.

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FRUIT STATISTICS.

COUNTIES.	APPLE ORCHARDS.		BUSHEL	ACRES.	BUSHEL	ACRES.
	No. of Acres.	No. bearing trees.	Apples.	Cranberries.	Cranberries.	Growing Timber.
Adams	118	4,095	1,475	11	372	37,702
Ashland						599,040
Barron	58	1,020	166			
Bayfield	1	50	30			800,000
Brown	240	5,728	2,918			45,597
Buffalo	306	7,091	1,083			38,610
Burnett	1	105	1	2,590	4,149	1,230
Calumet	697	19,164	12,533			39,160
Chippewa	124	5,801	272		75	820,340
Clark	106	3,838	232		54	660,256
Columbia	1,784	61,404	14,400	7	433	70,402
Crawford	760	25,998	9,919		1	136,912
Dane	3,435	85,005	29,352	30	80	106,537
Dodge	2,912	88,029	33,147	22		41,949
Door	195	4,360	1,094	33	206	30,741
Douglas						171,250
Dunn	165	6,403	144			71,591
Eau Claire	179	10,626	434			39,579
Fond du Lac	2,683	81,106	37,229			45,577
Grant	2,761	115,358	38,160			109,356
Green	1,511	50,262	20,259			49,370
Green Lake	1,208	44,510	21,065	104	402	25,870
Iowa	1,043	41,629	14,019			67,082
Jackson	181	6,978	303	7,585	1,271	80,830
Jefferson	2,080	125,364	41,303	1	25	31,499
Juneau	561	13,149	2,088	3,891	16,926	36,029
Kenosha	1,833	65,358	20,772			15,405
Kewaunee	94	2,517	970			40,810
La Crosse	262	6,786	336			33,818
La Fayette	1,438	49,066	14,897			35,956
Lincoln	7	142	89			1,006,240
Manitowoc	1,136	19,709	6,920	8	29	151,597
Marathon	24	1,355	240			518,571
Marinette	21	150	76	50	75	475,000
Marquette	503	9,586	3,174	280	529	49,679
Milwaukee	2,036	74,116	15,037			14,415
Monroe	585	20,254	2,516	340	3,576	45,766
Oconto	35	2,317	747			
Outagamie	1,146	15,693	7,392	40		106,148
Ozaukee	1,199	29,973	8,003			22,755
Pepin	47	2,859	92			16,086
Pierce	277	7,410	909			112,443
Polk	32	2,718	101	16	392	319,414
Portage	62	3,142	248	360	2,780	442,910
Racine	2,104	67,005	18,244		10	15,940
Richland	707	21,729	2 189			157,769
Rock	3,555	118,272	49,146			53,331
St. Croix	170	16,821	288		13	122,488
Sauk	1,653	47,030	9,517	5	49	105,894
Shawano	173	1,102	126	73	25	65,981
Sheboygan	2,023	60,491	23,905	5	301	54,242
Taylor	26	2				634,490
Trempealeau	328	14,005	280	1		64,527
Vernon	907	22,094	10,287			166,945
Walworth	4,247	123,477	59,037	3	75	49,996
Washington	2,154	66,064	28,058	134	310	52,468
Waukesha	3,645	111,852	34,838	50	151	45,440
Waupaca	355	10,621	1,823	203	1,107	127,000
Waushara	407	13,709	6,539	857	30,095	69,888
Winnebago	1,551	86,896	33,821			19,933
Wood	17	631	50	400	4,166	21,237
Total	58,481	1,901,424	650,463	17,099	67,617	9,391,370

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SUMMARY OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE UNITED STATES SIGNAL SERVICE STATION, MADISON, WISCONSIN, FOR THE YEAR 1878.

Month.	Thermometer Exposed in Open Air.				Barometer, Height Reduced to 32°.				Inches of rain and melted snow.	Amount of cloudiness.	Percentage of saturation.	Percentage of Winds.							
	Max.	Min.	Mean.	Variation.	Max.	Min.	Mean.	Fluctuation.				S.	SW.	W.	NW.	N.	NE.	E.	SE.
January	45	— 9	25.1	54	29.293	29.151	28.990	.542	.40	6.4	90	16	11	1	28	14	24	3	3
February	53	13	32.8	40	29.373	28.552	28 940	.821	1.19	5.6	82	17	15	2	3	43	11	3	6
March	69	27	41.0	42	29.224	28.542	28.908	.681	2 43	5.36	73.2	12	17	4	16	19	7	11	14
April	73	36	52.3	37	29.042	28.351	28.7 0	.691	2.97	5.5	67	8	22	6	20	11	16	3	14
May	77	41	54.6	36	29.191	28.557	28 9 5	.637	4.64	5.8	69 9	6	20	11	30	2	7	2	22
June	86	48	65.8	38	29.283	28.698	28.990	.585	4 20	4.9	69 3	15	12	10	10	16	16	6	15
July	94	61	74.9	31	29.175	28.737	29.008	.438	7.55	4.5	73.6	18	10	2	18	19	11	1	22
August	86	58	72.2	28	29.257	28.611	28.928	.299	4.28	3.9	71	6	29	1.5	34	13.5	1.5	4.5	10
September	85	42	62.9	43	29.433	28.630	29 055	.646	6.54	4 0	70	27	14	7	27	6	.....	1	18
October	76	20	49.6	56	29.392	28.487	28.959	.905	3.78	3.85	67.8	24	17	19	27	3	3	1	6
November	58	21	46 7	34	29.380	28 594	29.017	.786	0.76	.....	70.2	33	24	22	63	13	27	11.0	15
December	39	— 8	22.1	47	29.485	28.435	29.018	1.050	0.79	....	66 2	15	31	6)	57	24	18	4	5
Sums	.....	.....	...	.....	.....	.....	.....	.....	39.56	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	41.7	.....	.....	.....	28.956	.....	.....	.....	72.2	17	19	12	28	15	12	4	12

1879.

January	46	—23	19 7	69	29.315	28.168	29.055	.777	0.79	7,273	63.5	39	31	46	60	21	7	8	4
February	46	—12	22.0	58	29.469	28.592	29 012	.877	2 54	7,842	70.0	33	16	35	42	20	24	12	14
March	68	5	3 .7	63	29.550	28.659	29.022	.891	1.34	8,626	66.8	37	25	45	59	12	11	5	23
April	82	12	48.2	70	29.29	28.220	28.952	1.078	3 38	7,618	59.3	40	14	9	37	32	31	14	33
May	86	35	60.7	51	29.402	28.537	29.000	.865	3 91	7,482	60.4	45	23	11	20	14	29	30	45
June	86	42	67.4	44	29.367	28 392	28.972	.975	2.80	6,020	69.6	39	25	18	15	21	19	22	51
July	91	55	74.3	38	29.193	28.226	28.948	.567	5.91	5,458	71.3	43	53	33	23	17	9	20	19
August	90	47	70.6	43	29.15	28.711	28.953	.446	0.99	6,054	66.8	48	31	21	42	18	12	15	31
September	78	37	59.0	41	29.376	2 .64	29 046	.612	2 79	7,291	70.3	47	16	43	42	15	5	3	37
October	84	24	58.0	60	29.5 9	28.591	29 069	.938	2.50	7,787	67.0	70	23	22	34	10	7	15	36
November	67	11	37.0	56	29.42	28.508	28.994	.914	6.02	7,909	78.1	42	18	38	46	13	11	10	22
December	54	—12	21.1	66	29.375	28.369	29.005	1.006	2.31	7,873	73.9	23	21	57	19	25	25	22	23
Sums	.....	.....	.....	.....	.....	.....	.....	.....	35.2	87,234	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	47.9	.....	.....	.....	29.010	.....	.....	.....	67 6	42	25	31	37	18	16	15	28
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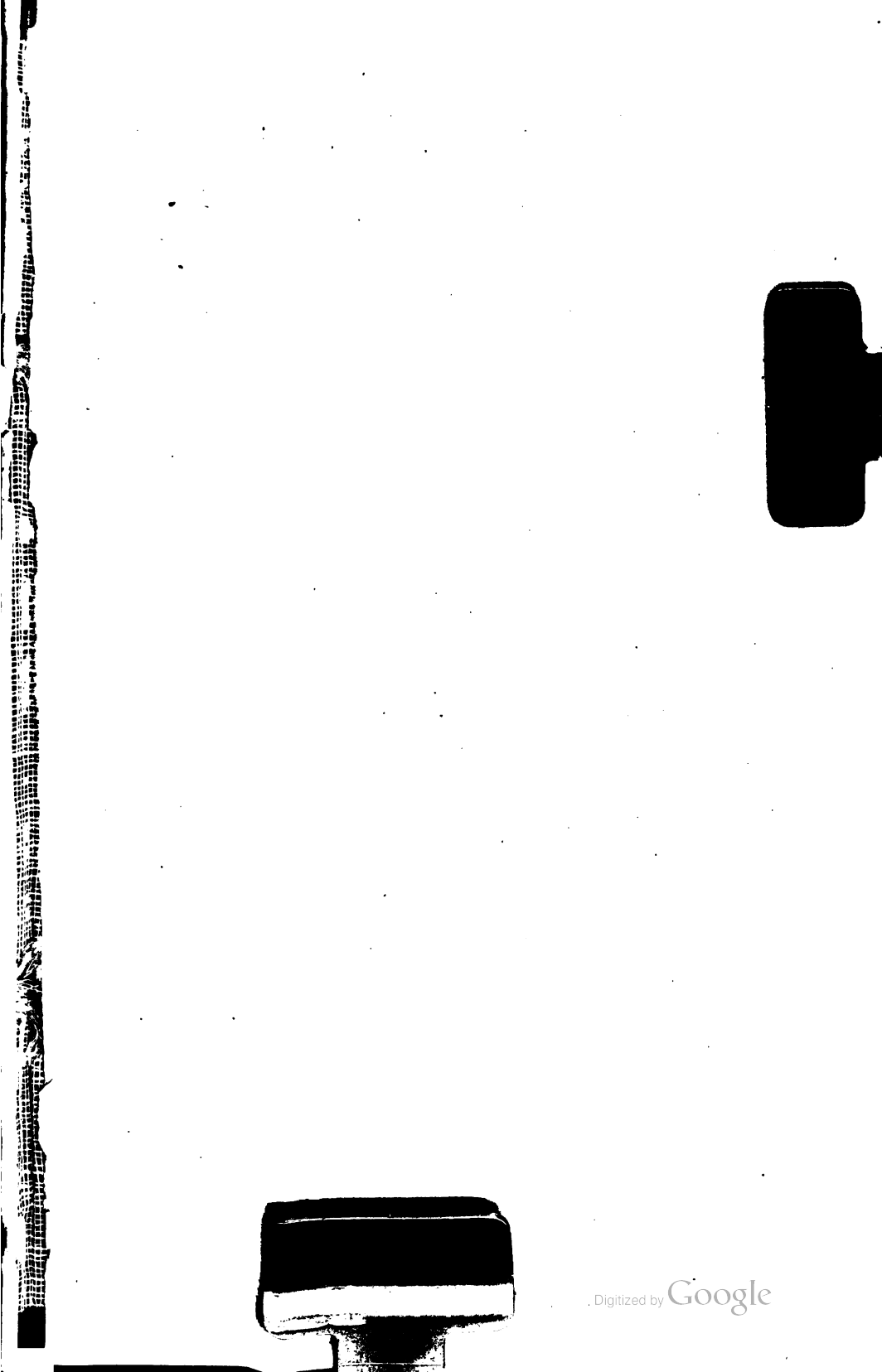
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